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THIS REPORT SUMMARIZES THE OPERATION OF THE IRONDALE CONTROL SYSTEM ON THE ROCKY MOUNTAIN ARSENAL DURING CALENDAR YEARS 1989 AND 1990. WATER TABLE CONTOUR MAPS AND 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) ISOCONCENTRATION MAPS HAVE BEEN PREPARED THAT PROVIDE AN OVERALL DEPICTION OF THE DBCP PLUME DURING THE 1989-1990 PERIOD.

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IRONDALE CONTROL SYSTEM
ROCKY MOUNTAIN ARSENAL

REVIEW OF 1989/1990 OPERATIONS

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Prepared for
Shell Oil Company

February 1992

92090R02
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EXECUTIVE SUMMARY

This report summarizes the operation of the Irondale Control System (ICS) on the Rocky Mountain Arsenal (RMA) during calendar years 1989 and 1990. Water table contour maps and 1,2-dibromo-3-chloropropane (DBCP) isoconcentration maps have been prepared that provide an overall depiction of the DBCP plume during the 1989-1990 period.

The alluvial aquifer exhibited similar seasonal fluctuations during the 1989-1990 period as in previous years, except that the water table was slightly lower during the 1989-1990 period, thus reducing the amount of water that could be pumped from the ICS extraction system. The average flowrate pumped to the ICS treatment system declined from 1,221 in 1988 to 1,020 gpm during 1989 and 1,014 gpm during 1990. The water table decline was at least partially due to increased pumping during summer and fall months from South Adams County Water and Sanitation District (SACWSD) wells adjacent to the RMA.

The DBCP plume continues to appear to be decreasing in concentration. Average concentrations of treatment plant influent were about 0.30 ug/l during 1989 and 0.22 ug/l during 1990.

The ICS treatment plant performed very well during 1989 and 1990. Stream factors were above 99.9 percent for each year. The activated carbon treatment plant effectively removed detectable quantities of DBCP.

Very low levels of DBCP (below USATHAMA certified reporting limits) were reported in two SACWSD wells in the spring of 1989 and spring of 1990. These SACWSD wells are connected to a water treatment system that uses granular activated carbon to remove

contaminants. Shell installed five new monitoring wells near the south end of the ICS during March and April, 1990 to evaluate the performance of the system in this area. The new wells were sampled in April, 1990 and the results indicated that a small portion of the DBCP plume was bypassing the system.

Shell immediately began investigations to determine the cause of the bypass, and potential engineering and operational solutions were identified. Bypass was confirmed in additional samples collected in July, 1990. The Army, EPA, Colorado Department of Health (CDH), South Adams County Water and Sanitation District (SACWSD) and Tri-County Health Department (TCH) were notified of the sampling results. Engineering design was completed in the fall of 1990 and the Rail Classification Yard/Motor Pool Area IRA was modified to include the proposed changes to the ICS. The Final Implementation Document for the IRA was issued in January, 1991. All ICS system modifications were completed and in operation by September, 1991.

1.0 BACKGROUND

The Rocky Mountain Arsenal (RMA) covers over 17,000 acres near Denver, Colorado, in Adams County (see Figure 1). Part of the Arsenal was leased for the manufacture of pesticides and herbicides. In March 1980 one of these pesticides, DBCP (1,2-dibromo-3-chloropropane), was discovered in some alluvial wells in the Irondale community along the northwest boundary of the RMA. Chemical and groundwater level data collected after March 1980 indicated that groundwater contaminated with DBCP was flowing off the RMA in the northwest corner of Section 33. The data also indicated that the contaminated groundwater extended northwest from the vicinity of the Rail Classification Yard in Section 3 (see Figure 2).

In order to eliminate the off-post migration of the groundwater containing DBCP, Shell Chemical Company constructed a groundwater control system, known as the Irondale Control System (ICS), in the northwest corner of Section 33 and southwest corner of Section 28 (see Figure 3). The system became operational in 1981. The original system has been modified to include additional extraction and recharge wells and a new adsorber. The ICS was designed to pump the groundwater contaminated with DBCP from the alluvial aquifer, treat the pumped water, then recharge the effluent back into the aquifer. Documents have been previously published that discuss the design of the ICS and modifications to the system that were made prior to 1989. During the 1989-1990 period the system was composed of the following main elements:

- Two rows of extraction wells, 38 total: Row 1 (the front or upgradient row) consisting of 21 wells, and Row 2 (the rear or downgradient row) consisting of 17 wells.

- Three upflow, pulsed bed, granular activated carbon adsorbers (each with a 40,000 lb capacity) arranged in a parallel configuration. Two adsorbers are normally online while the third is available for backup.

- One row of 22 recharge wells adjacent to the RMA boundary.

In addition, a large number of monitoring wells near the ICS and along the DBCP plume (see Figures 4A & 4B) are available for monitoring both the movement of the DBCP plume and the effectiveness of the ICS in intercepting the plume.

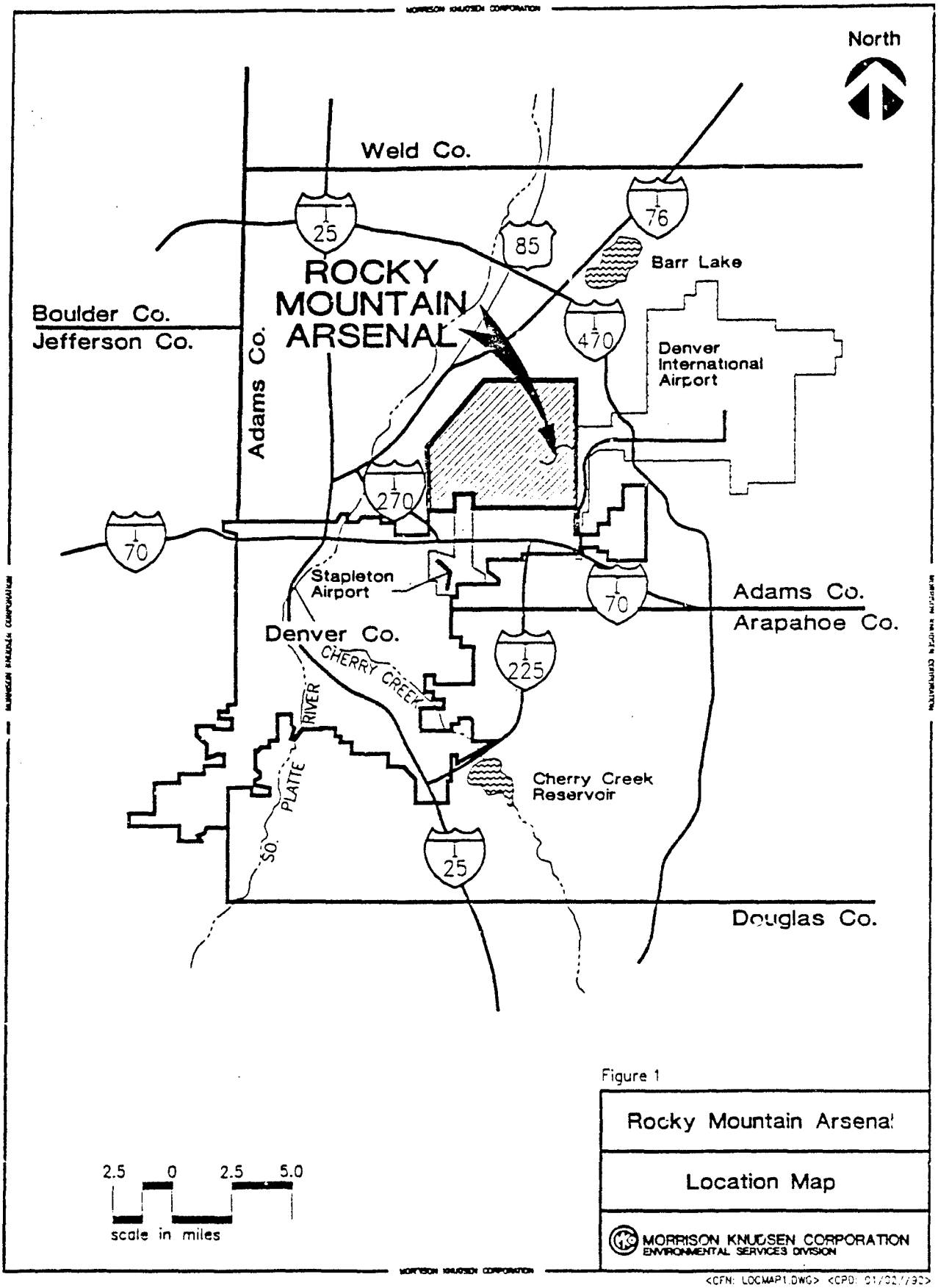

Figure 1

Rocky Mountain Arsenal

Location Map

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ENVIRONMENTAL SERVICES DIVISION

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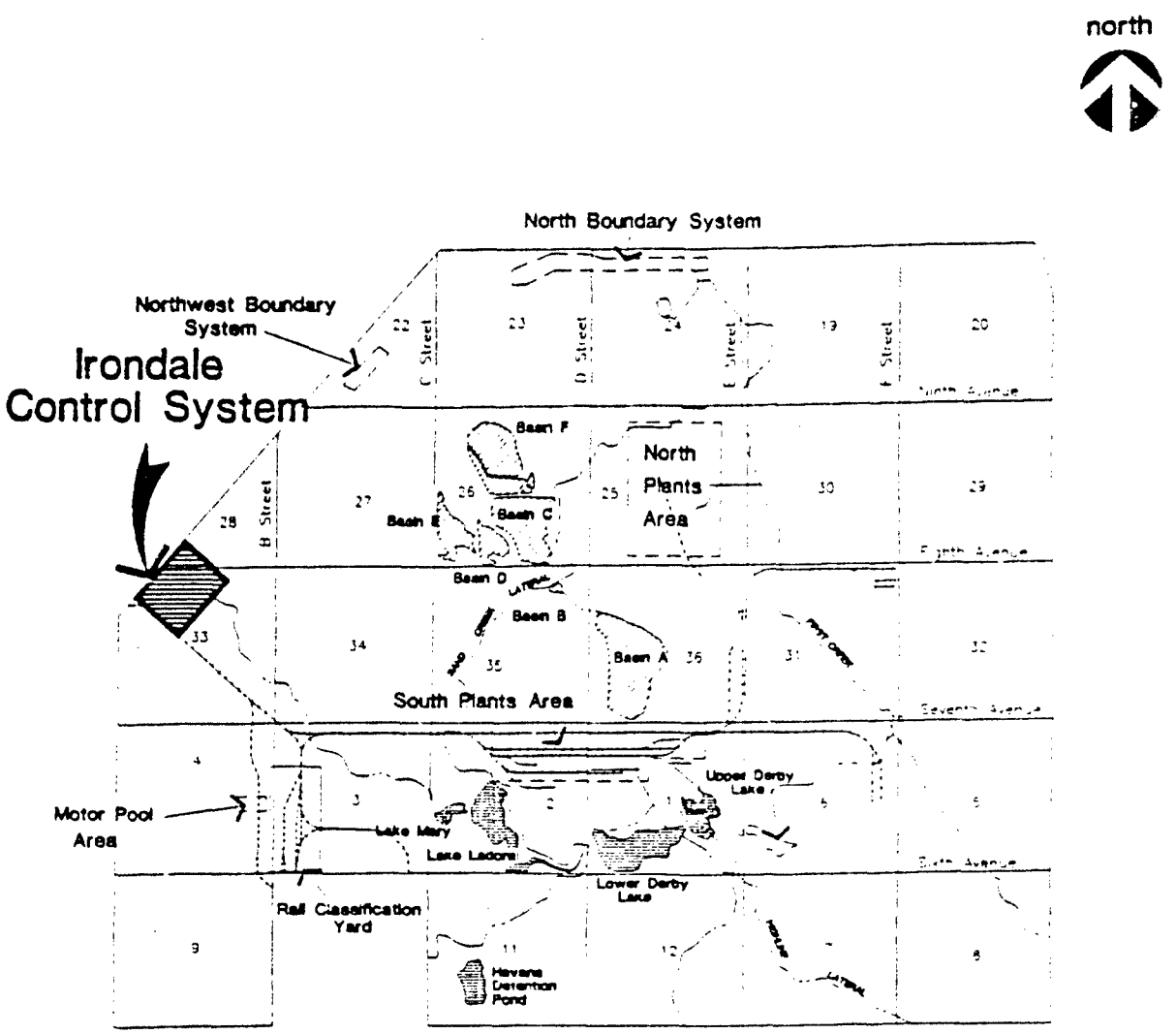

Figure 2

Location Map of Irondale Control System

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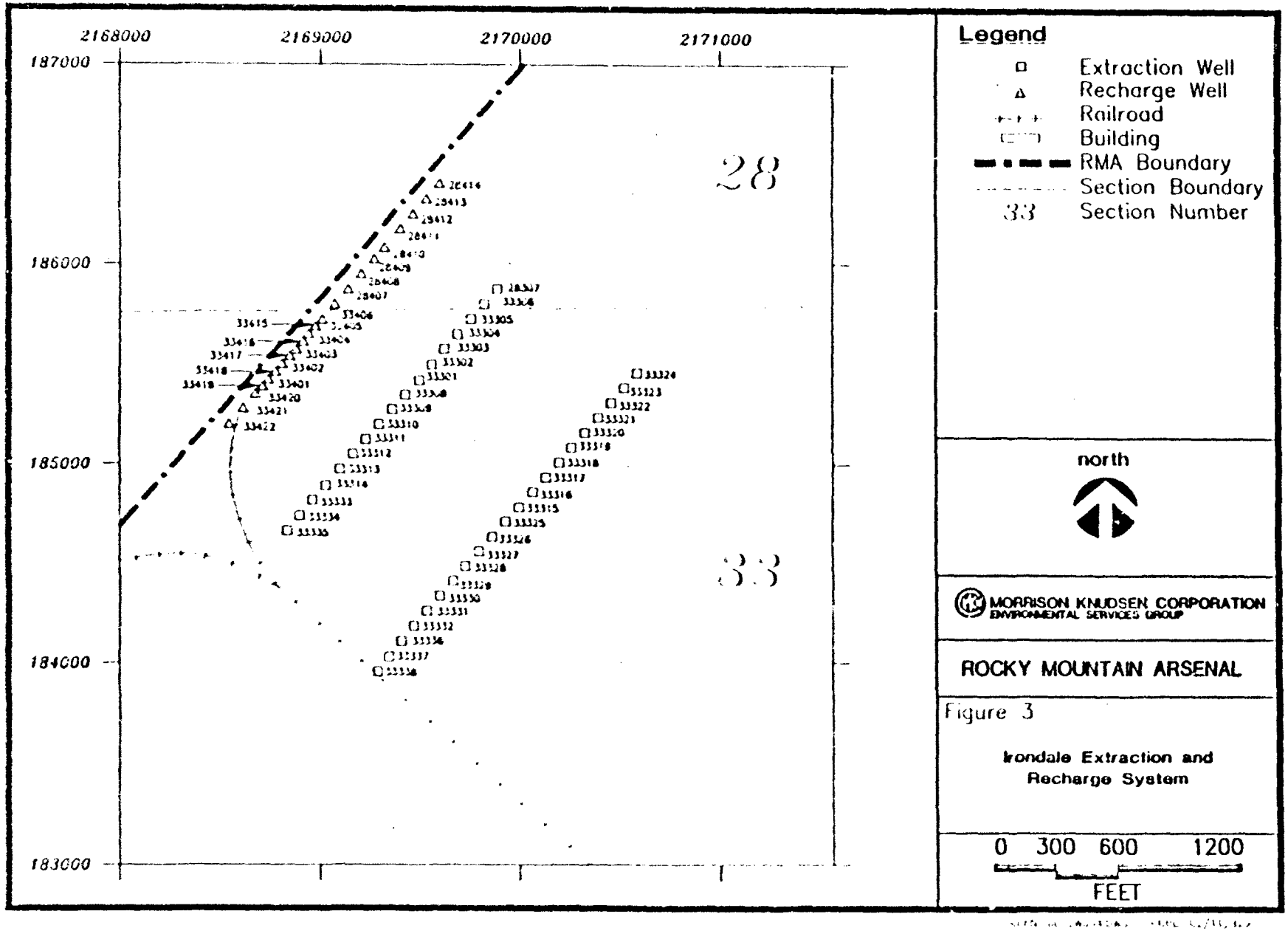
ENVIRONMENTAL SERVICES GROUP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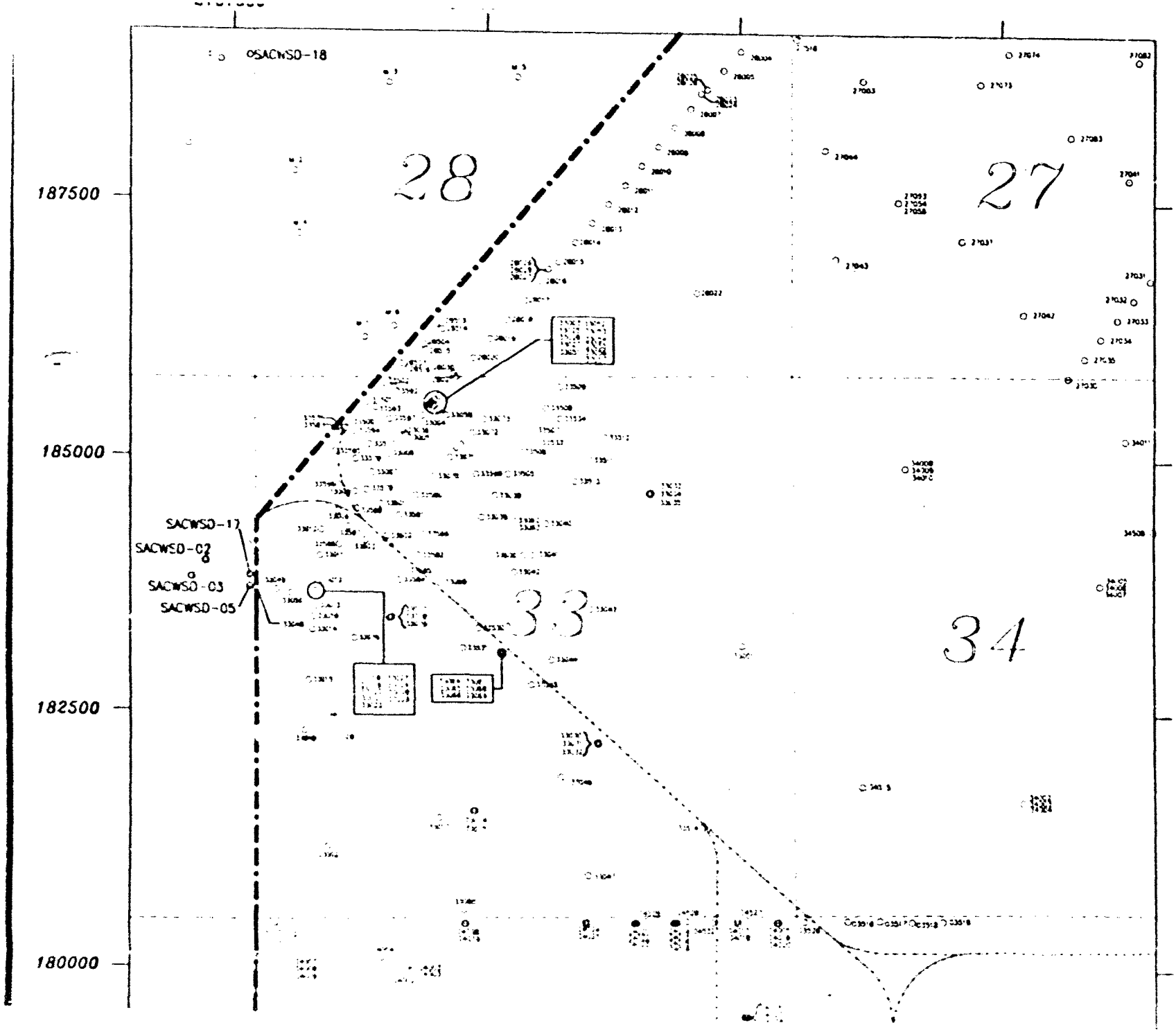
187000
186000
185000
184000
183000
28
33
Legend
Extraction Well
Recharge Well
Railroad
Building
RMA Boundary
Section Boundary
33 Section Number
north
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP
ROCKY MOUNTAIN ARSENAL
Figure 3
Irondale Extraction and
Recharge System
0 300 600 1200
FEET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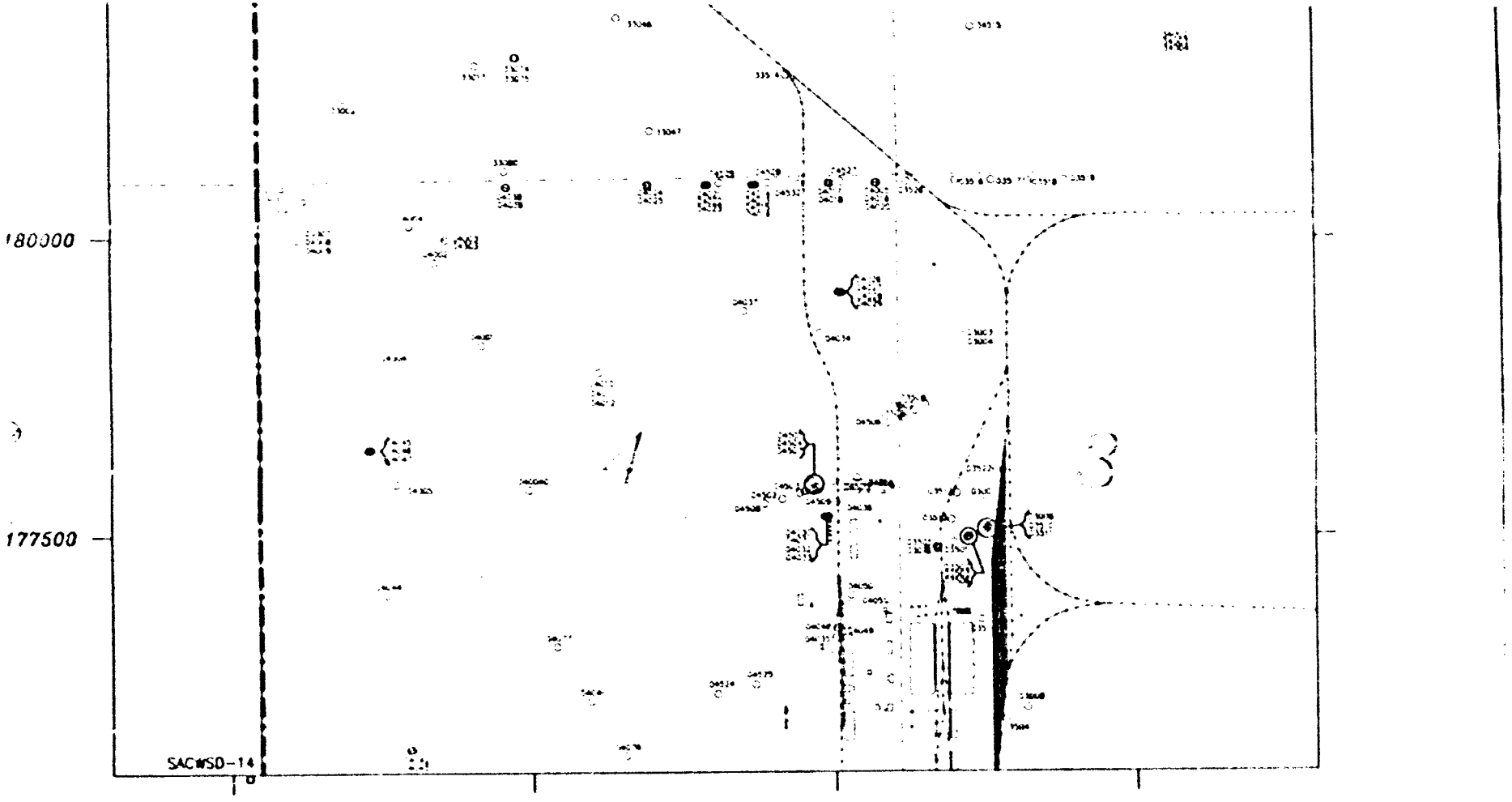
SACWSD-05



north

Legend

- Monitoring Well
- Railroad
- Buildings
- RMA Boundary

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 4A

Legend

- Monitoring Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

north

MORRISON KNUDSEN CORPORA
ENVIRONMENTAL SERVICES GROUP

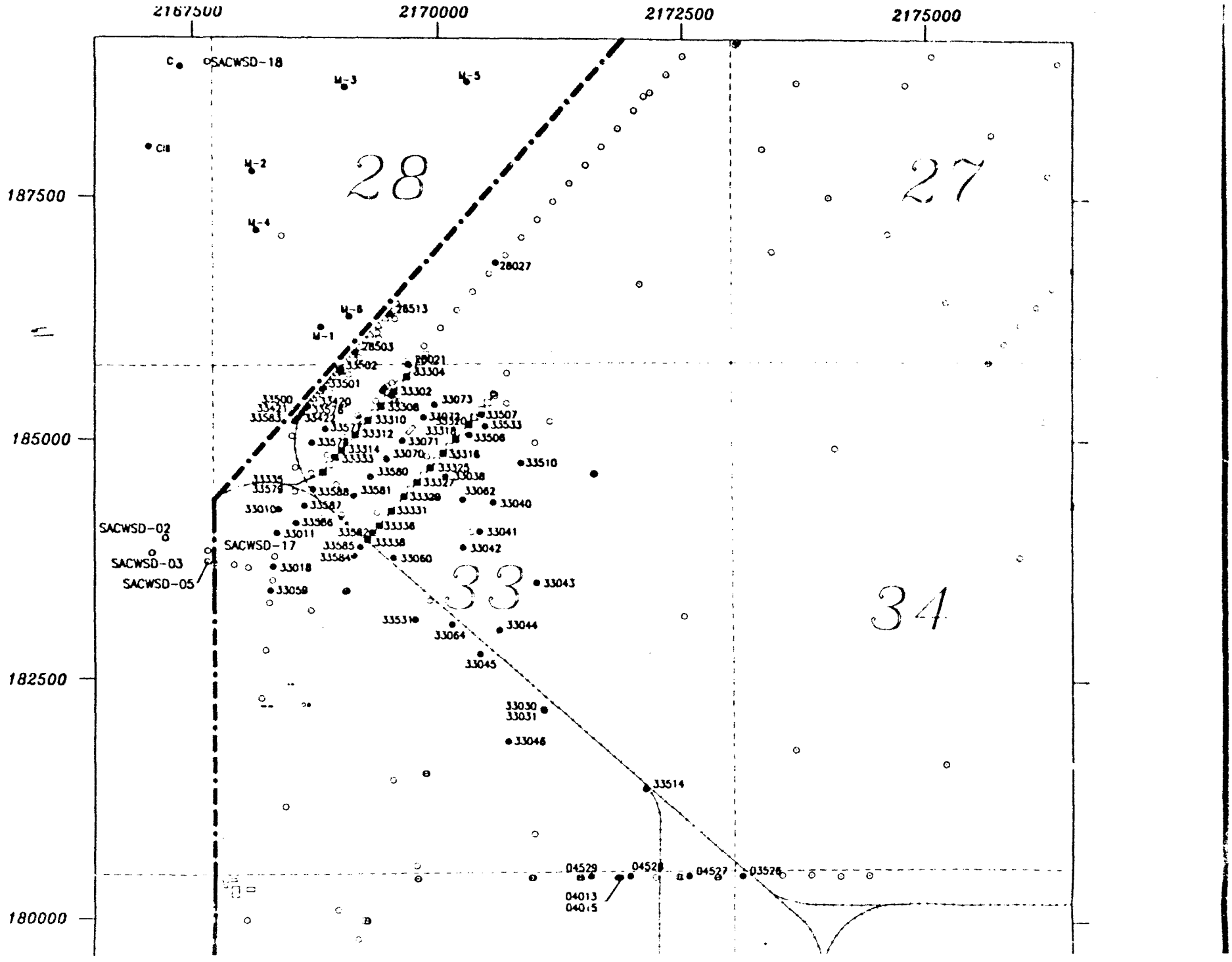
ROCKY MOUNTAIN ARSENA

Figure 4A

Well Location Map
(1989 – 1990)

0 600 1200 240

FEET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M-2
M-3
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M-5
M-6
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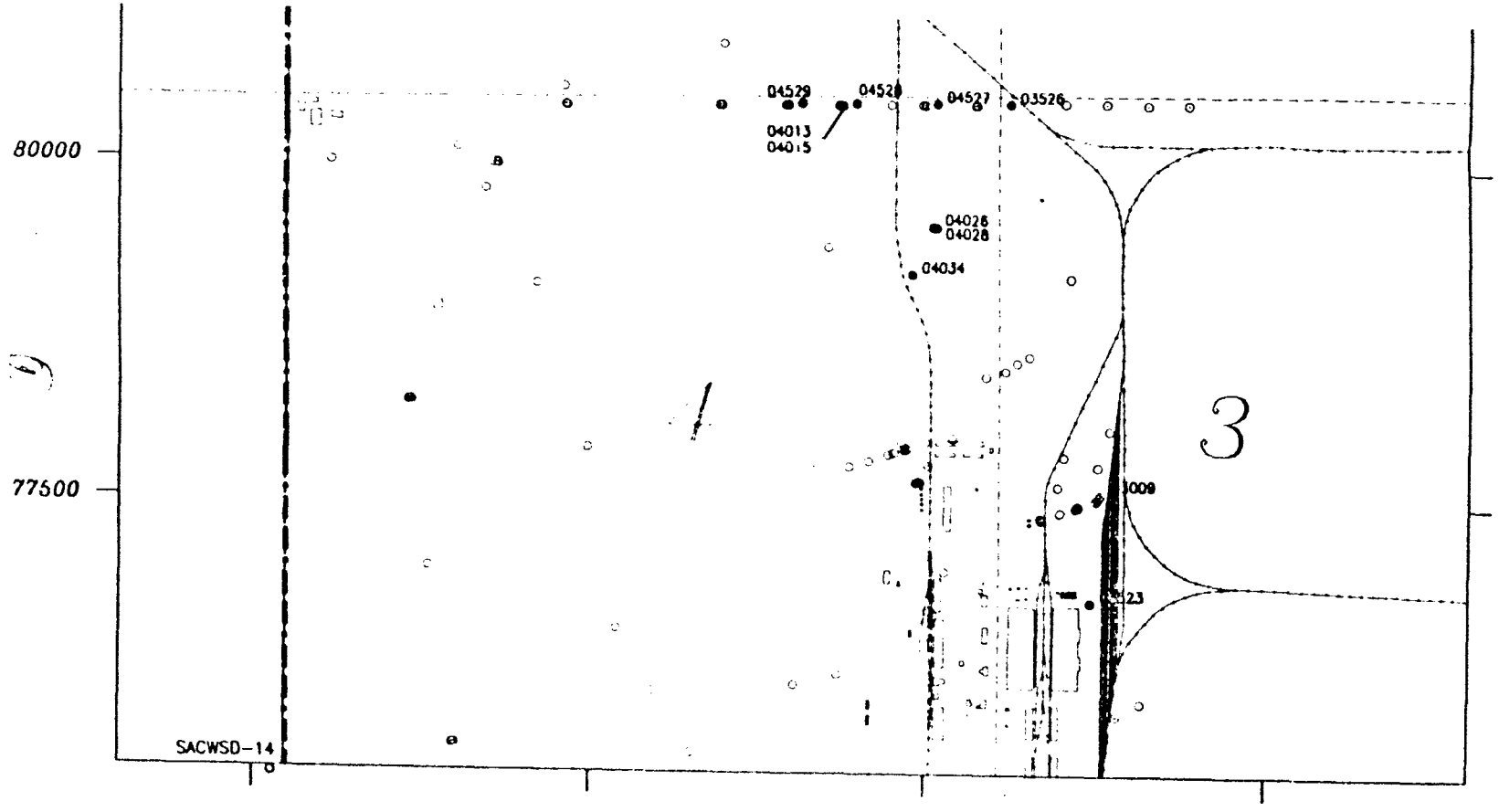

Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

Measurement Wells

- Extraction Well
- Monitoring Well
- Recharge Well

north

MORRISON KNUDSEN CORPORATION
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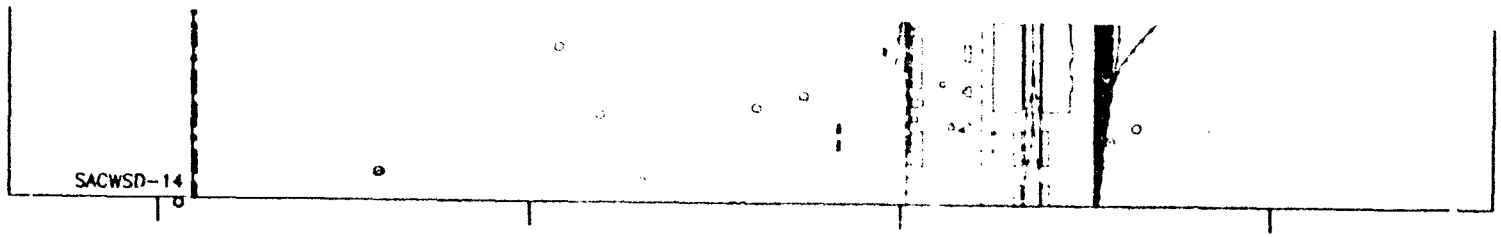
ROCKY MOUNTAIN ARSENAL

Figure 4B

Irondale Water Quality
Monitoring Wells
(1989 – 1990)



Legend

□	Extraction Well
○	Monitoring Well
△	Recharge Well
———	Railroad
▭	Buildings
▬ ▪ ▬ ▪ ▬	RMA Boundary
- - - - - -	Section Boundary
33	Section Number

Measurement Wells

■	Extraction Well
●	Monitoring Well
▲	Recharge Well

north

MORRISON KNUDSEN CORPORATION
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ROCKY MOUNTAIN ARSENAL

Figure 48

Irondale Water Quality
Monitoring Wells
(1989 – 1990)

0 600 1200 2400

FEET

2.0 PURPOSE AND SCOPE

The purpose of this report is to review 1989 and 1990 operations of the ICS with regard to its effectiveness in preventing groundwater contaminated with DBCP from moving beyond the boundaries of the RMA. Reports presenting evaluations of the ICS from December, 1981 through fiscal year 1986 have been prepared by the U. S. Army Engineer Waterways Experimental Station (WES) (RIC 84065R01 and 85130R01). Reports for calendar years 1987 through 1988 have been prepared and issued by Shell.

The geology and hydrology associated with the system and surrounding area were discussed in the December, 1984 WES report referenced above, and will not be repeated herein.

3.0 SYSTEM OPERATIONS

Tabulated weekly average flow rates through the ICS treatment plant are shown in Tables 1 and 2 for 1989 and 1990, respectively. Weekly average flowrates are shown graphically in Figures 5 and 6. The average flow through the ICS treatment system during 1989 was 1,020 gallons per minute (gpm). The flow varied from a weekly low of 788 gpm to a weekly high of 1,296 gpm. During 1990 the flow through the treatment system was slightly less as it ranged from a weekly low of 714 gpm to a weekly high of 1,287 gpm and averaged 1,014 gpm. These annual average flowrates continued the downward trend exhibited during 1988 when the average flowrate dropped to 1,221 gpm from an average flowrate of 1,339 gpm during 1987. The downward trend is the result of a generally lowering water table in the vicinity of the ICS during the past few years. The existing 38 extraction wells have not been capable of pumping as much water from the thinning aquifer as compared to when the water table was higher. The lowering of the water table is at least partly due to the increased pumping from the South Adams County Water and Sanitation District (SACWSD) water supply wells located south west of the ICS just off the RMA boundary (see Figure 4A). This increased pumping occurs during the summer and fall and is resulting in a growing cone of depression around the SACWSD wells.

The ICS treatment plant operated at stream factors greater than 99.9 percent for both 1989 and 1990. During 1989 the treatment plant was completely down five separate times for a total downtime of only 3 hours and 40 minutes. During 1990 the plant was completely down only three times for a total downtime of 6 hours and 10 minutes. Table 3 itemizes the periods of treatment plant downtime during 1989 and 1990. Downtime periods as short as those experienced by the ICS treatment plant during 1989 and

1990 are not thought to be of much significance relative to interception of the DBCP plume. With the generally small water table gradients within the DBCP plume, the plume could only shift a few inches, at most, during a one or two hour period.

Treatment plant influent and effluent samples were collected and analyzed for DBCP on a biweekly basis during 1989 and 1990. Results of these analyses are contained in Tables 4 and 5. The measured influent concentrations ranged from 0.16 to 0.43 ug/l during 1989 and from 0.17 to 0.26 ug/l during 1990. The average influent concentrations decreased from about 0.30 during 1989 to about 0.22 ug/l during 1990. With one possible exception, no DBCP was detected in the treatment plant effluent during the entire 1989 and 1990 period. The possible exception was on April 9, 1990 when a concentration of 0.21 ug/l was reported for the effluent from Adsorber V-103. However, the value is almost identical to the value for the influent of Adsorber V-103 on the same date, yet the value reported for the influent to Adsorber V-101 was reported to be below detection limits. It appears that the reported concentrations for the V-101 influent and V-103 effluent were transposed for this date. Therefore, this anomaly has been corrected on Table 5.

As stated previously, the adsorbers are arranged in a parallel configuration. During the first part of 1989, Adsorbers V-102 and V-103 were utilized to treat the influent water while Adsorber V-101 was on standby. Beginning August 31, 1989 and throughout the remainder of the 1989-1990 period, Adsorbers V-101 and V-103 were used for water treatment and Adsorber V-102 was shifted to standby status.

Carbon was added to the three adsorbers on several occasions during 1989 and 1990. No carbon was added to Adsorber V-101 during 1989, but 9,600 pounds were added during 1990. Adsorber

V-102 had 20,100 pounds of carbon added during 1989, but none was added during 1990. Adsorber V-103 had 31,300 pounds of carbon added during 1989 and 16,000 pounds added during 1990.

The generally decreasing groundwater extraction rates of the ICS and reports that very low levels of DBCP (below USATHAMA detection limits) were detected in SACWSD wells in the spring of 1989 and spring of 1990 raised questions regarding the effectiveness of the ICS in intercepting all of the DBCP plume. Consequently Shell installed five new monitoring wells (33584, 33585, 33586, 33587, and 33588) near the south end of the ICS during March and April, 1990. The new wells were sampled in April, 1990 and indicated a small amount of DBCP was probably bypassing the south end of the ICS. Shell immediately began investigations to determine how to eliminate all bypass. As part of these investigations, Shell installed totalizing turbine flowmeters on each of the 38 extraction wells during April of 1990.

Bypass of DBCP on the southern end of the ICS was confirmed in samples collected in July 1990. The Army, EPA, Colorado Department of Health (CDH), South Adams County Water and Sanitation District (SACWSD) and Tri-County Health Department (TCH) were notified of the sampling results. Engineering design was completed in the fall of 1990 and with the concurrence of all parties, the Rail Classification Yard/Motor Pool Area IRA was modified to include the proposed improvements to the ICS. All improvements to the system were fully operational by September 1991.

TABLE 1
IRONDALE CONTROL SYSTEM
TOTAL FLOW THROUGH ADSORBERS
1989 WEEKLY AVERAGES

WEEK ENDING	FLOW (GPM)	WEEK ENDING	FLOW (GPM)
01/06/89	1,296	07/07/89	994
01/13/89	1,283	07/14/89	963
01/20/89	1,272	07/21/89	910
01/27/89	1,282	07/28/89	897
02/03/89	1,244	08/04/89	832
02/10/89	1,138	08/11/89	818
02/17/89	1,096	08/18/89	795
02/24/89	1,074	08/25/89	836
03/03/89	1,062	09/01/89	814
03/10/89	1,056	09/08/89	812
03/17/89	1,051	09/15/89	788
03/24/89	1,032	09/22/89	803
03/31/89	1,067	09/29/89	829
04/07/89	1,163	10/06/89	844
04/14/89	1,262	10/13/89	853
04/21/89	1,216	10/20/89	851
04/28/89	1,185	10/27/89	884
05/05/89	1,166	11/03/89	903
05/12/89	1,144	11/10/89	920
05/19/89	1,139	11/17/89	936
05/26/89	1,129	11/24/89	949
06/02/89	1,104	12/01/89	961
06/09/89	1,089	12/08/89	985
06/16/89	1,082	12/15/89	1,015
06/23/89	1,101	12/22/89	1,055
06/30/89	1,052	12/29/89	1,015

TABLE 2
IRONDALE CONTROL SYSTEM
TOTAL FLOW THROUGH ADSORBERS
1990 WEEKLY AVERAGES

WEEK ENDING	FLOW (GPM)	WEEK ENDING	FLOW (GPM)
01/05/90	1,097	07/06/90	858
01/12/90	1,152	07/13/90	813
01/19/90	1,159	07/20/90	770
01/26/90	1,164	07/27/90	804
02/02/90	1,185	03/03/90	797
02/09/90	1,205	08/10/90	790
02/16/90	1,209	08/17/90	769
02/23/90	1,244	08/24/90	756
03/02/90	1,257	08/31/90	759
03/09/90	1,255	09/07/90	755
03/16/90	1,270	09/14/90	733
03/23/90	1,243	09/21/90	714
03/30/90	1,234	09/28/90	722
04/06/90	1,236	10/05/90	742
04/13/90	1,194	10/12/90	777
04/20/90	1,158	10/19/90	813
04/27/90	1,136	10/26/90	848
05/04/90	1,181	11/02/90	890
05/11/90	1,287	11/09/90	929
05/18/90	1,202	11/16/90	976
05/25/90	1,098	11/23/90	1,026
06/01/90	1,054	11/30/90	1,080
06/08/90	1,042	12/07/90	1,112
06/15/90	1,003	12/14/90	1,151
06/22/90	943	12/21/90	1,104
06/29/90	907	12/28/90	1,104

Table 3. Downtime of the ICS Treatment Plant	
Date	Downtime
1989	
April 4	20 minutes
April 10	10 minutes
July 10	25 minutes
August 7	60 minutes
December 24	105 minutes
1990	
August 19	95 minutes
August 24	140 minutes
December 17	135 minutes

Table 4. Concentration of DBCP in Irondale Treatment Plant Influent and Effluent during 1989.

Date Sampled	Adsorber V-101 Influent (ug/l)	Adsorber V-101 Effluent (ug/l)	Adsorber V-102 Influent (ug/l)	Adsorber V-102 Effluent (ug/l)	Adsorber V-103 Influent (ug/l)	Adsorber V-103 Effluent (ug/l)
01/03/89			0.31	LT 0.06	0.39	LT 0.06
01/16/89			0.34	LT 0.06	0.39	LT 0.06
01/30/89			0.33	LT 0.06	0.34	LT 0.06
02/13/89			0.43	LT 0.06	0.40	LT 0.06
02/27/89			0.42	LT 0.06	0.42	LT 0.06
03/13/89			0.40	LT 0.06	0.39	LT 0.06
03/27/89			0.39	LT 0.06	0.40	LT 0.06
04/10/89			0.34	LT 0.06	0.22	LT 0.06
04/24/89			0.27	LT 0.06	0.29	LT 0.06
05/08/89			0.27	LT 0.06	0.27	LT 0.06
05/22/89			0.26	LT 0.06	0.29	LT 0.06
06/05/89			0.28	LT 0.06	0.31	LT 0.06
06/19/89			0.25	LT 0.06	0.28	LT 0.06
07/03/89			0.28	LT 0.06	0.23	LT 0.06
07/17/89			0.32	LT 0.06	0.29	LT 0.06
07/31/89			0.22	LT 0.06	0.32	LT 0.06
08/14/89			0.20	LT 0.06	0.33	LT 0.06
08/28/89			0.25	LT 0.06	0.29	LT 0.06
09/11/89	0.16	LT 0.06			0.18	LT 0.06
09/25/89	0.26	LT 0.06			0.23	LT 0.06
10/09/89	0.30	LT 0.06			0.27	LT 0.06
10/23/89	0.28	LT 0.06			0.36	LT 0.06
11/06/89	0.26	LT 0.06			0.26	LT 0.06
11/20/89	0.32	LT 0.06			0.27	LT 0.06
12/18/89	0.21	LT 0.06				

1989 Summary of Influent Concentrations (ug/l)

	Min	Max	Avg
V-101/V-102	0.16	0.43	0.29
V-103	0.18	0.42	0.31

Table 5. Concentration of DBCP in Irondale Treatment Plant Influent and Effluent during 1990

Date Sampled	Adsorber V-101 Influent (ug/l)	Adsorber V-101 Effluent (ug/l)	Adsorber V-102 Influent (ug/l)	Adsorber V-102 Effluent (ug/l)	Adsorber V-103 Influent (ug/l)	Adsorber V-103 Effluent (ug/l)
01/15/90	0.22	LT 0.06			0.17	LT 0.06
01/29/90	0.20	LT 0.06			0.19	LT 0.06
02/12/90	0.19	LT 0.06			0.20	LT 0.06
02/26/90	0.19	LT 0.06			0.17	LT 0.06
03/12/90	0.20	LT 0.06			0.19	LT 0.06
03/26/90	0.18	LT 0.06			0.18	LT 0.06
04/09/90	0.21	LT 0.06			0.22	LT 0.06
04/23/90	0.21	LT 0.06			0.21	LT 0.06
05/07/90	0.21	LT 0.06			0.19	LT 0.06
05/21/90	0.24	LT 0.06			0.20	LT 0.06
06/04/90	0.24	LT 0.06			0.22	LT 0.06
06/18/90	0.24	LT 0.06			0.22	LT 0.06
07/02/90	0.26	LT 0.06			0.24	LT 0.06
07/16/90	0.24	LT 0.06			0.21	LT 0.06
08/13/90	0.21	LT 0.06			0.22	LT 0.06
08/27/90	0.21	LT 0.06			0.20	LT 0.06
09/10/90	0.18	LT 0.06			0.17	LT 0.06
09/24/90	0.20	LT 0.06			0.20	LT 0.06
10/08/90	0.24	LT 0.06			0.25	LT 0.06
10/22/90	0.25	LT 0.06			0.24	LT 0.06
11/05/90	0.23	LT 0.06			0.24	LT 0.06
11/19/90	0.22	LT 0.06			0.22	LT 0.06
12/03/90	0.23	LT 0.06			0.21	LT 0.06
12/17/90	0.18	LT 0.06			0.19	LT 0.06
12/31/90	0.22	LT 0.06			0.19	LT 0.06

1990 Summary of Influent Concentrations (ug/l)

	Min	Max	Avg
V-101	0.18	0.26	0.22
V-103	0.17	0.25	0.21

Note: The effluent and influent DBCP concentrations reported for Adsorber V-101 for April 9, 1990 appear to have been transposed, and have been corrected in this table.

IRONDALE CONTROL SYSTEM
TOTAL FLOW THROUGH ADSORBERS
1989 WEEKLY AVERAGES

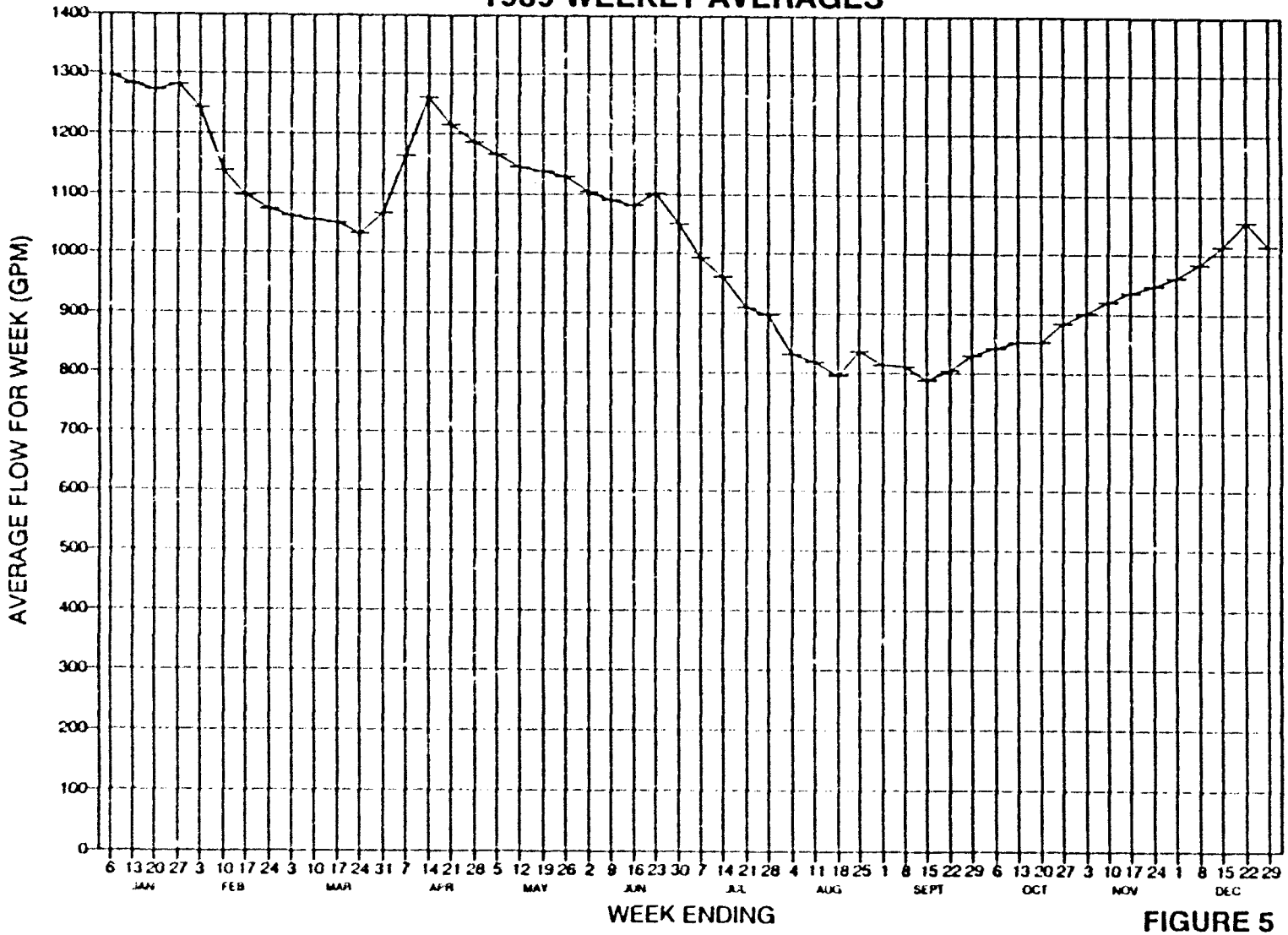


FIGURE 5

IRONDALE CONTROL SYSTEM
TOTAL FLOW THROUGH ADSORBERS
1990 WEEKLY AVERAGES

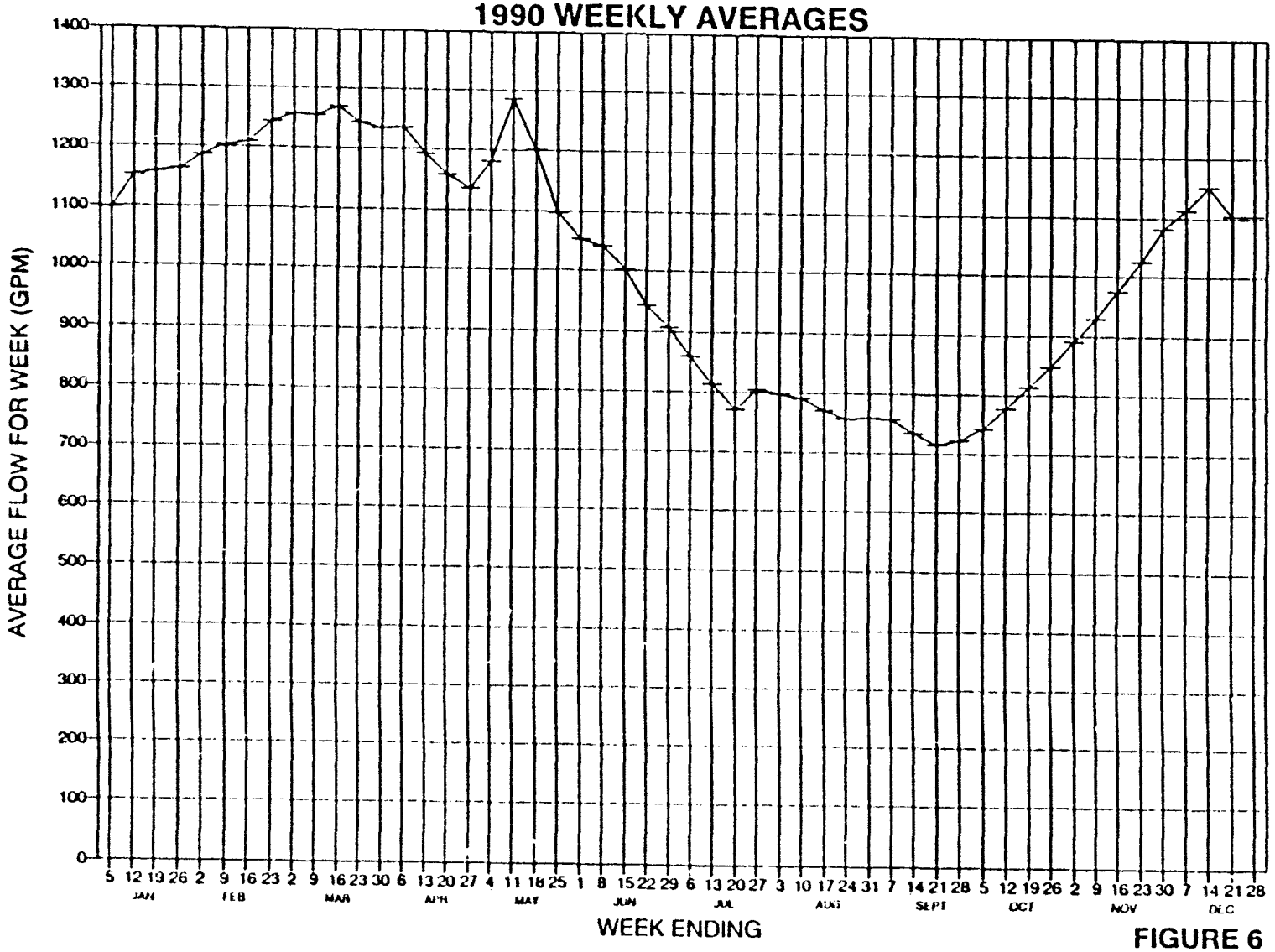


FIGURE 6

4.0 DATA EVALUATION

4.1 Water Table

A quarterly water table monitoring program was conducted during 1989 and 1990. Water level measurements were collected for a large number of wells in the vicinity of the DBCP plume extending from the ICS roughly two miles upgradient to the Rail Classification Yard in Section 3. The water level data were collected during the months of January, April, July, and October of both 1989 and 1990. The water level data (tabulated in Appendix A), have been used in preparing quarterly water table contour maps for the area through which the DBCP plume extends. These maps are contained in Figures 7A through 14A.

The water table maps show that the general flow direction from the Rail Classification Area to the ICS has remained fairly constant. The maps do however show that there is an increasing cone of depression around the South Adams County Water Supply District (SACWSD) wells to the southwest of the ICS. In the summer when the pumping rates of the SACWSD wells reaches a peak, the cone of depression appears to extend into the southern end of the ICS.

4.2 DBCP Isoconcentration Maps

A quarterly water quality monitoring program was conducted during 1989 and 1990. Water quality samples were collected and analyzed for DBCP for a large number of wells in the vicinity of the ICS and along the DBCP plume extending from the ICS roughly two miles upgradient to the Rail Classification Yard in Section 3. The quarterly sampling was conducted during January, April, July, and October of both 1989 and 1990. The DBCP data, which are

tabulated in Appendix B, have been used in preparing quarterly DBCP plume maps which are contained in Figures 7B through 14B.

The highest concentration of DBCP in the groundwater sampling was in Well 03523 in the Rail Classification Area where concentrations were 24 ug/l in the first quarter of 1989. Concentrations along the plume decrease towards the ICS where measured concentrations within the plume were always under 3 ug/l during the 1989-1990 period. Concentrations within the plume appeared to show a general decrease during this period. This decline appears to be consistent with a general decline in concentrations of DBCP within the plume over the past several years.

The DBCP plume maps show that the general plume configuration between the Rail Classification Area and the ICS has remained fairly constant. The 1990 maps however, with the benefit of the five new monitoring wells near the south end of the ICS discussed above, show that a relatively small part of the DBCP-contaminated groundwater probably bypassed the south end of the ICS during the summer of 1990. This appears to be due to the increasing cone of depression around the SACWSD wells to the southwest of the ICS. In the summer, when the pumping rates of the SACWSD wells reached a peak, the cone of depression extended into the southern end of the ICS. Any DBCP drawn into the SACWSD wells would have been treated with the SACWSD carbon adsorption systems.

4.3 TCE Data

Treatment plant influent and effluent samples were collected and analyzed for Trichloroethylene (TCE) on a quarterly basis during 1989 and 1990. TCE analysis was conducted at the request of the Army. Results of these analyses are presented in Tables 6 and 7. The measured influent concentrations ranged from 0.32 to 0.70 ug/l during 1989 and from 0.23 to 0.69 ug/l during 1990.

Effluent concentrations were all below detection limits in 1989. A TCE concentration of 0.168 ug/l was reported for the effluent from Adsorber V-101 in October, 1990 which is well below the MCL of 5.0 ug/l. All other effluent concentrations measured in 1990 were below detection limits. Sampling results for TCE in selected monitoring wells are provided in Appendix C.

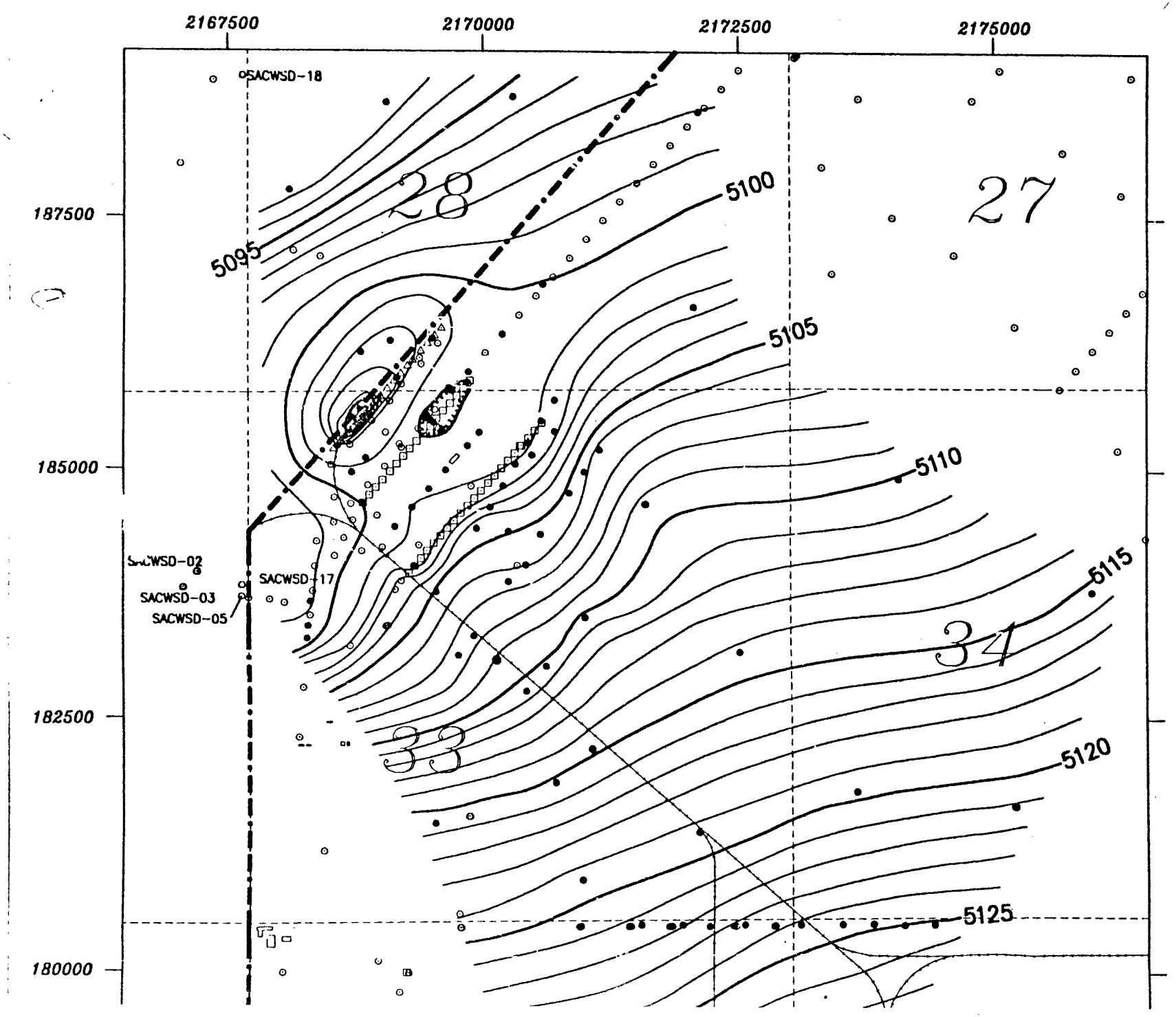
Table 6. Concentration of TCE in Irondale Treatment Plant Influent and Effluent during 1989.

Date Sampled	Adsorber V-101		Adsorber V-102		Adsorber V-103	
	Influent (ug/l)	Effluent (ug/l)	Influent (ug/l)	Effluent (ug/l)	Influent (ug/l)	Effluent (ug/l)
01/17/89			LT 0.50		0.57	
04/14/89			0.69		0.70	
07/10/89			0.54	LT 0.12	0.47	LT 0.12
10/11/89	0.368	LT 0.160			0.317	LT 0.160

Note: Results given on January 17, 1989 were not specified as to being Influent or Effluent, therefore the assumption was made that they were Influent.

Table 7. Concentration of TCE in Irondale Treatment Plant Influent and Effluent during 1990.

Date Sampled	Adsorber V-101		Adsorber V-102		Adsorber V-103	
	Influent (ug/l)	Effluent (ug/l)	Influent (ug/l)	Effluent (ug/l)	Influent (ug/l)	Effluent (ug/l)
04/05/90	0.688	LT 0.200			0.668	LT 0.200
07/06/90	0.226	LT 0.180			0.234	LT 0.180
10/04/90	0.293	0.168			0.3	LT 0.121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187500
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180000
SACWSD-18
SACWSD-02
SACWSD-03
SACWSD-05
SACWSD-17
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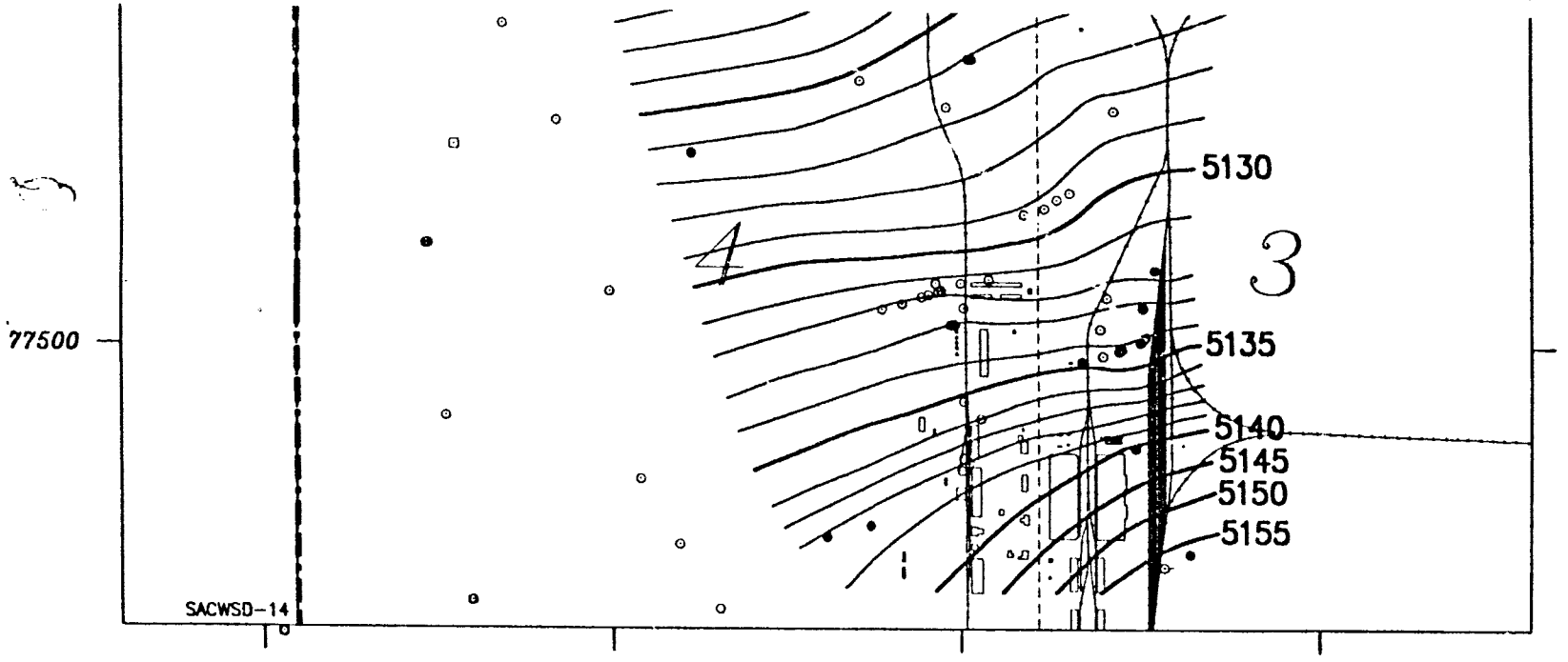
5125



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number
- 5 ft. Contour Line
- 1 ft. Contour Line
- 5120 Elevation in Feet Mean Sea Level

Measurement Wells

- Extraction Well
- Monitoring Well
- Recharge Well

north

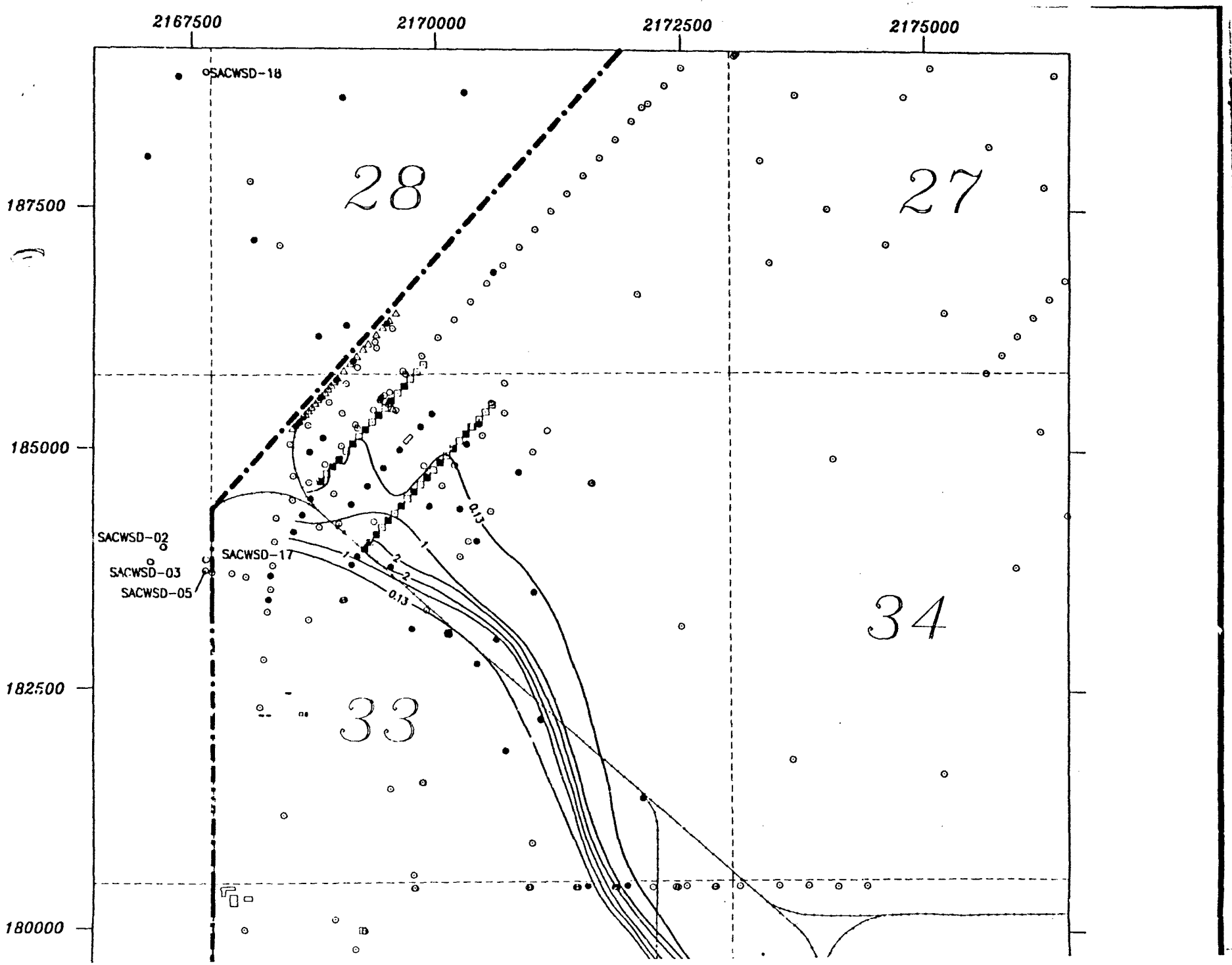
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 14A

Water Table Elevation
October 1990

0 600 1200 2400
FEET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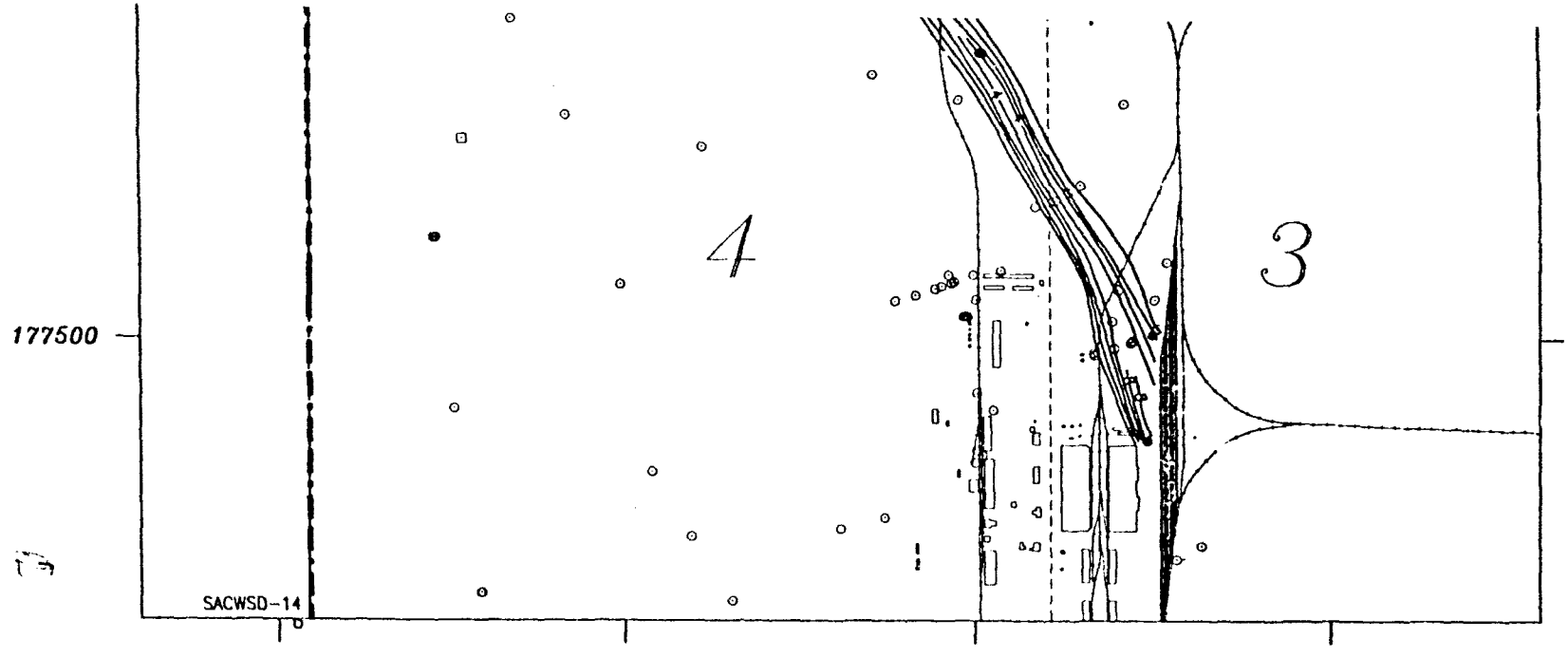
2170000
2172500
2175000
187500
185000
182500
180000
SACWSD-18
SACWSD-02
SACWSD-03
SACWSD-05
SACWSD-17
28
27
34
33
0.13
1
2
2
1
0.13



Legend

- □ Extraction Well
- ○ Monitoring Well
- △ Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

Measurement Wells

- ■ Extraction Well
- ● Monitoring Well
- ▲ Recharge Well

0.13 Certified Reporting Limit

north

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

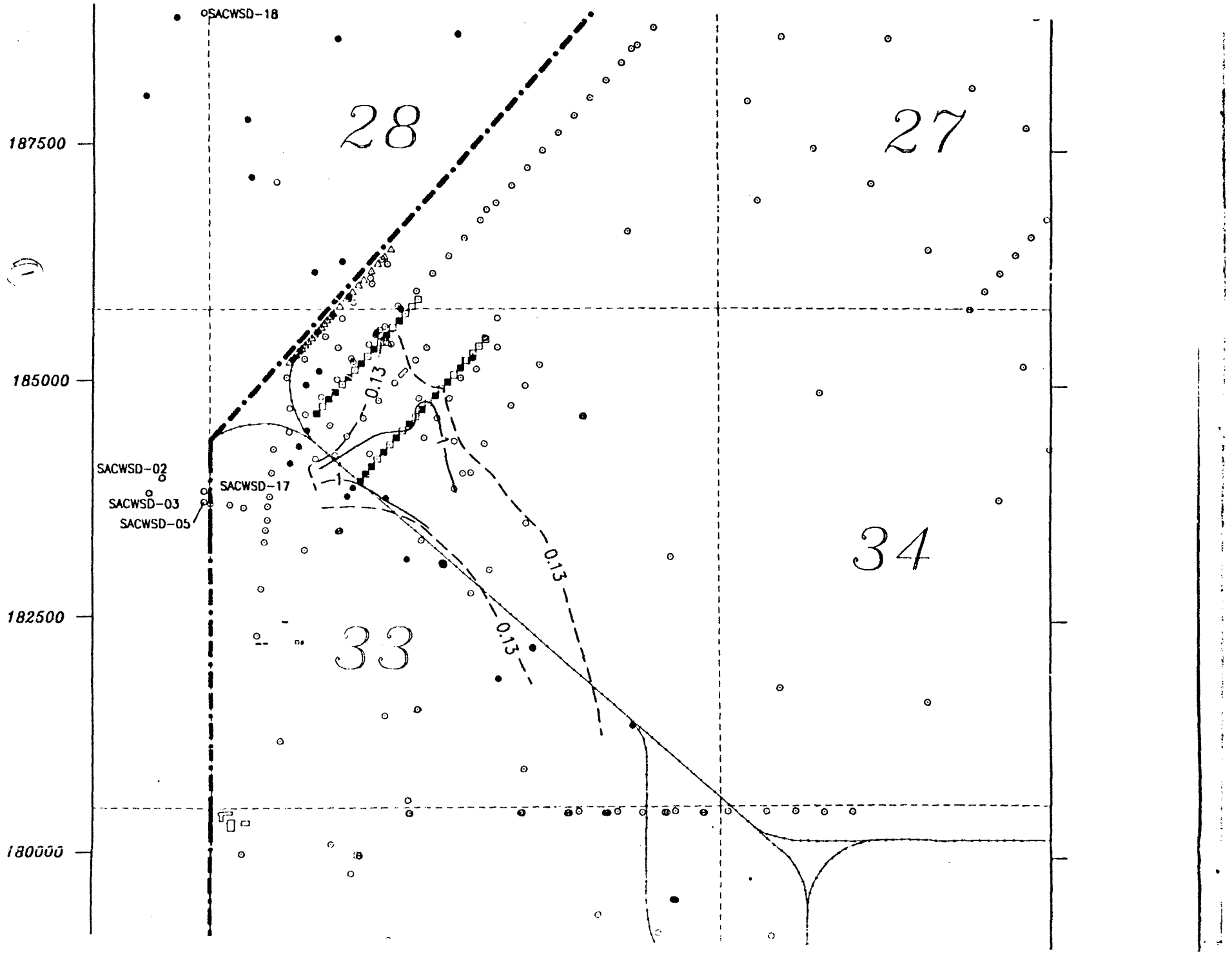
ROCKY MOUNTAIN ARSENAL

Figure 14B

DBCP Concentrations, ug/l
October 1990

0 600 1200 2400
FEET

<CFN:CB1090> <CPD:02/14/92>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27
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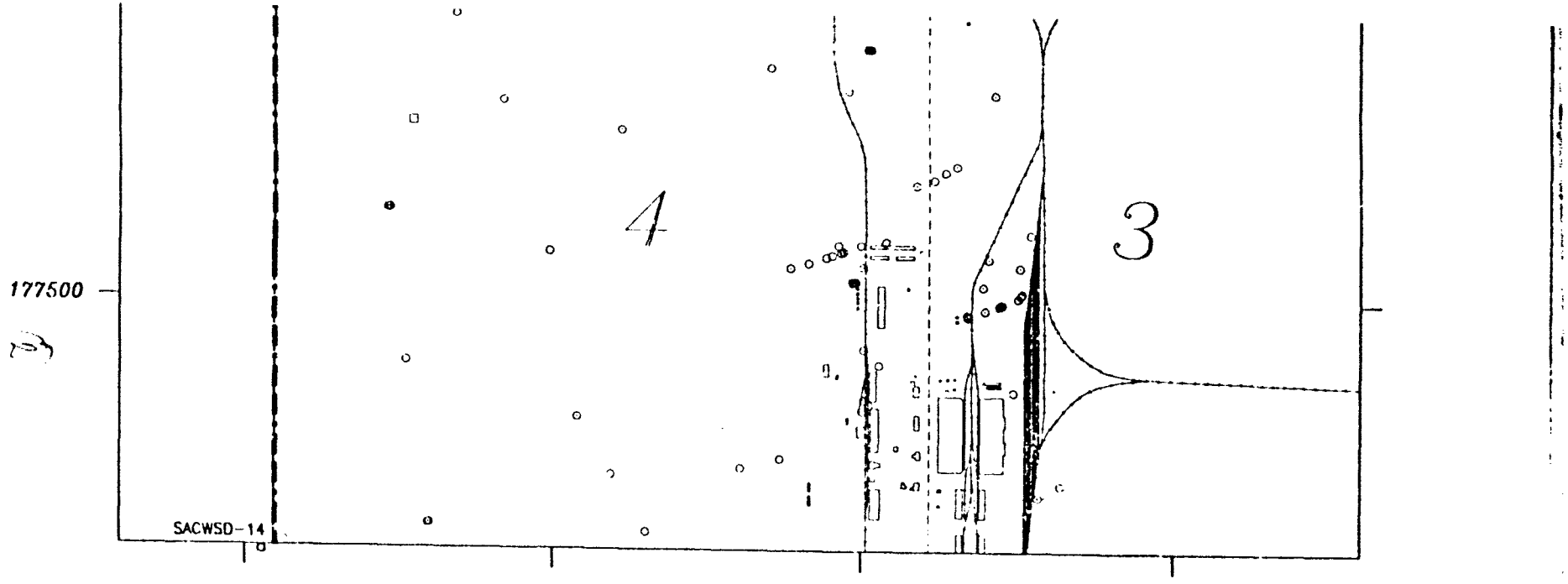
185000
182500
180000
SACWSD-02
SACWSD-17
SACWSD-03
SACWSD-05
0.13
0.13
0.13
34
33



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

Measurement Wells

- Extraction Well
- Monitoring Well
- Recharge Well

0.13 Certified Reporting Limit

north

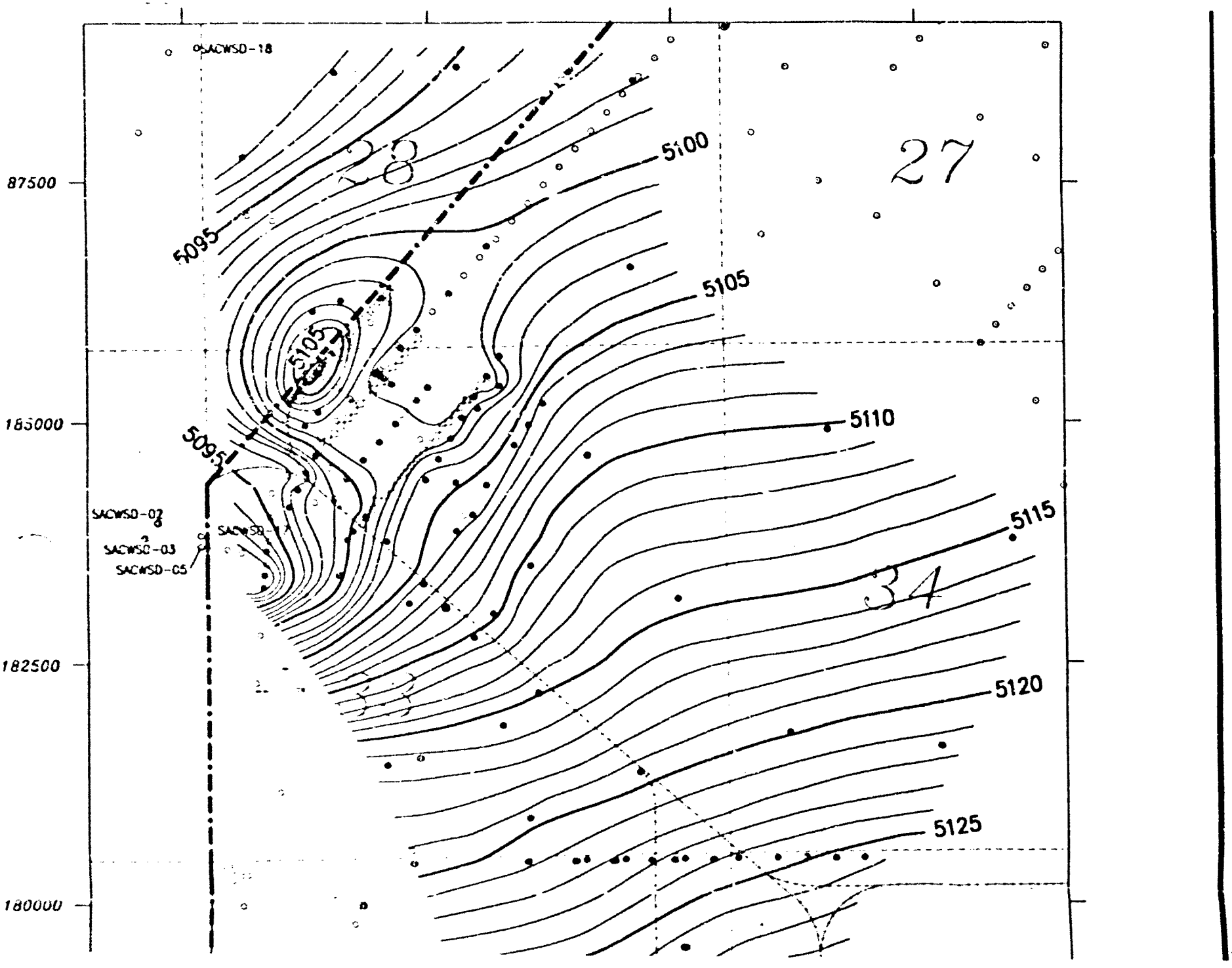
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 13B

DBCP Concentrations, ug/l
July 1990

0 600 1200 2400
FEET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27
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5095
5105
5105
5110
5115
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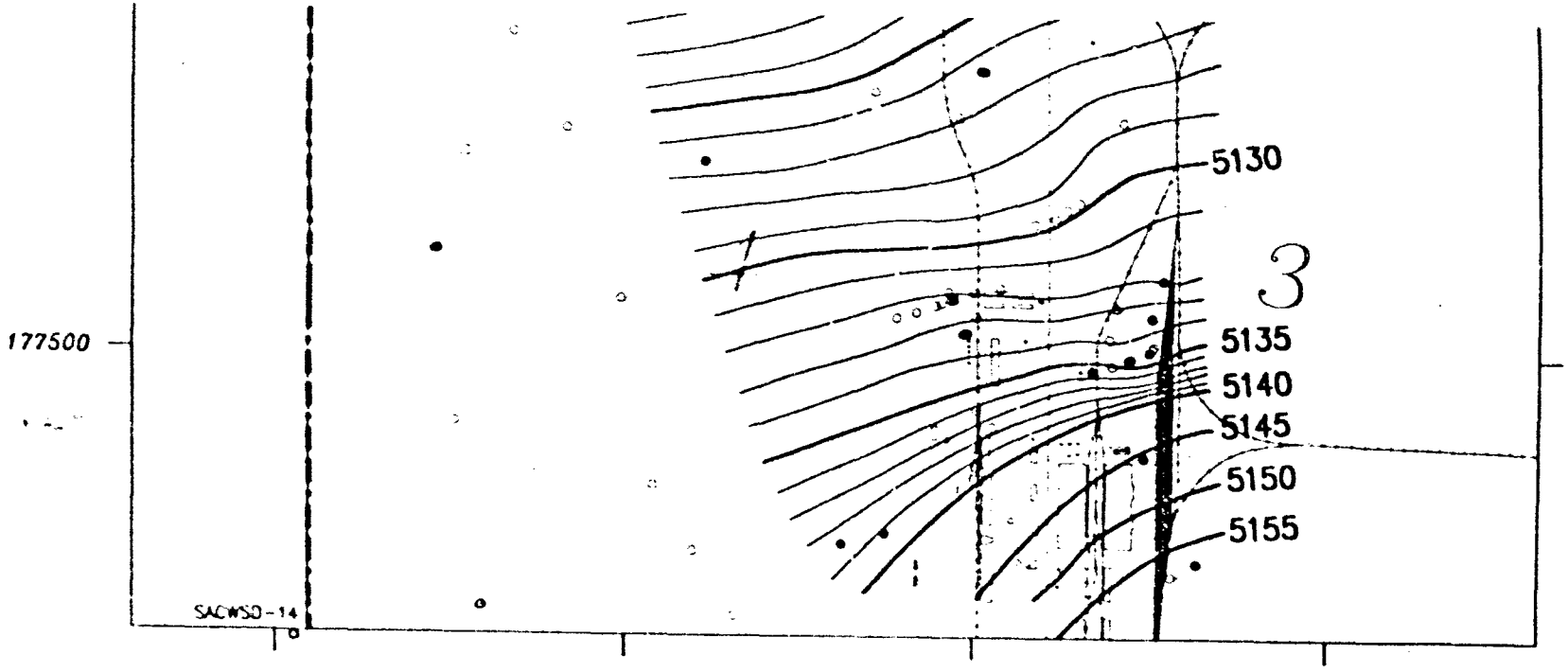
SACWSD-02
SACWSD-03
SACWSD-05
87500
185000
182500
180000



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number
- 5 ft. Contour Line
- 1 ft. Contour Line
- 5120 Elevation in Feet Mean Sea Level

Measurement Wells

- ■ Extraction Well
- ● Monitoring Well
- ▲ Recharge Well

north

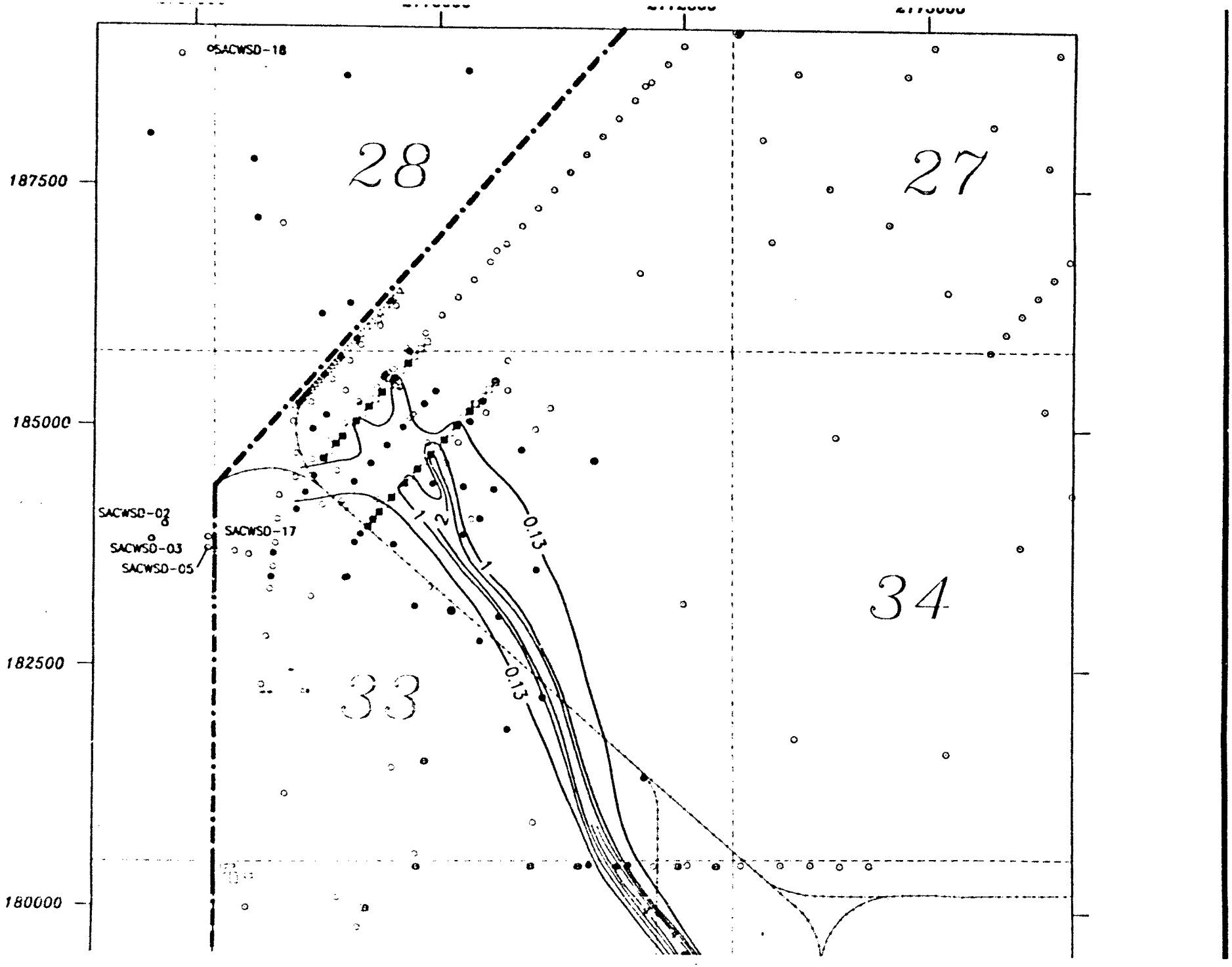
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 13A

Water Table Elevation
July 1990

0 600 1200 2400
FEET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27
34
33
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185000
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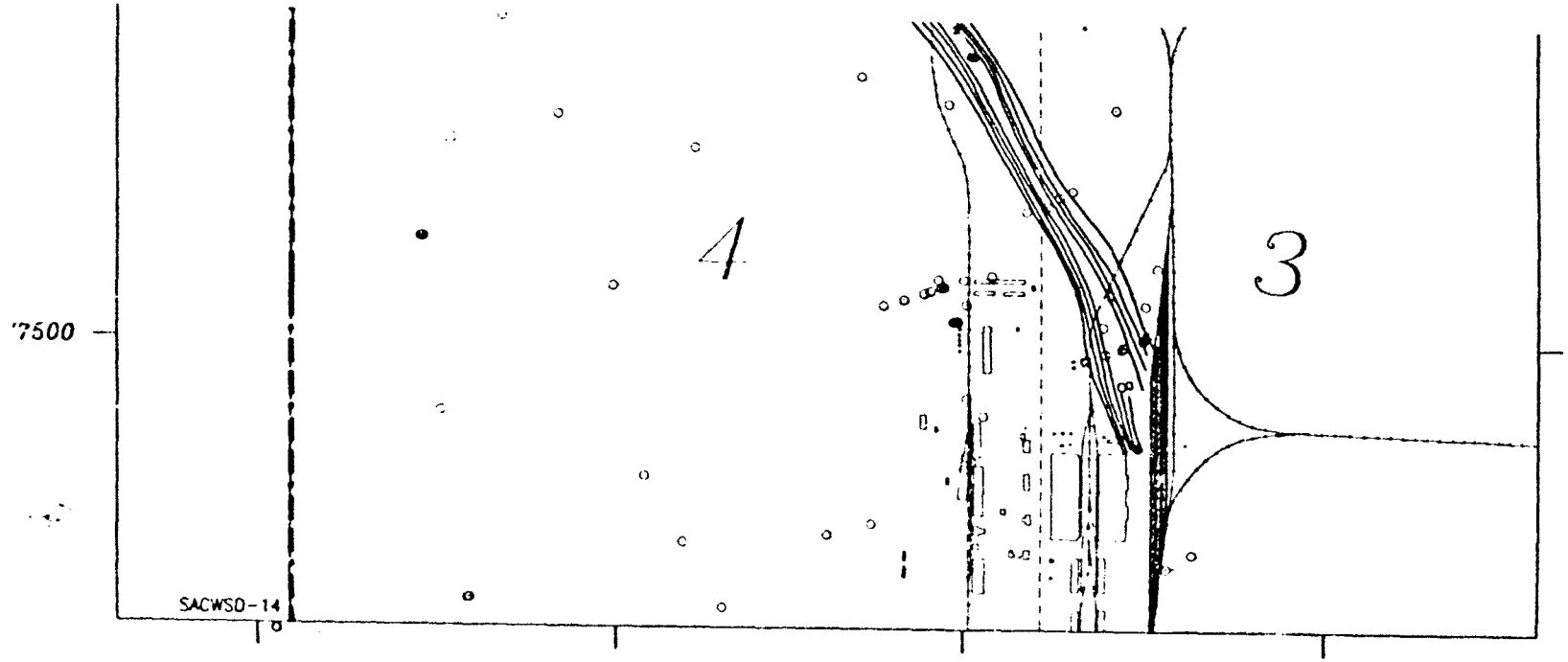
180000
SACWSD-02
SACWSD-17
SACWSD-03
SACWSD-05
0.13
1
2
1
0.13



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

Measurement Wells

- ■ Extraction Well
- ● Monitoring Well
- ▲ Recharge Well

0.13 Certified Reporting Limit

north

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

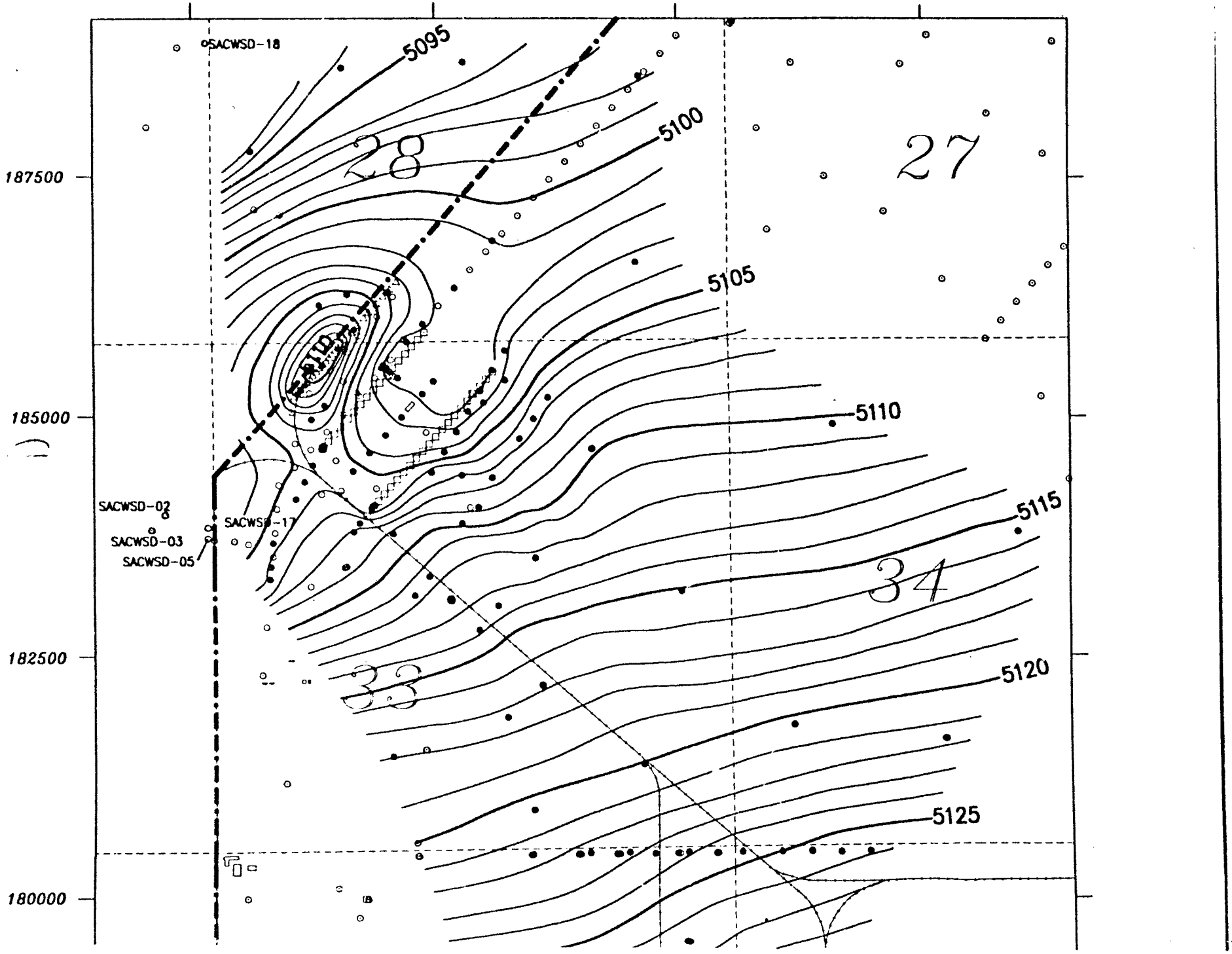
ROCKY MOUNTAIN ARSENAL

Figure 12B

DBCP Concentrations, ug/l
April 1990

0 600 1200 2400

FEET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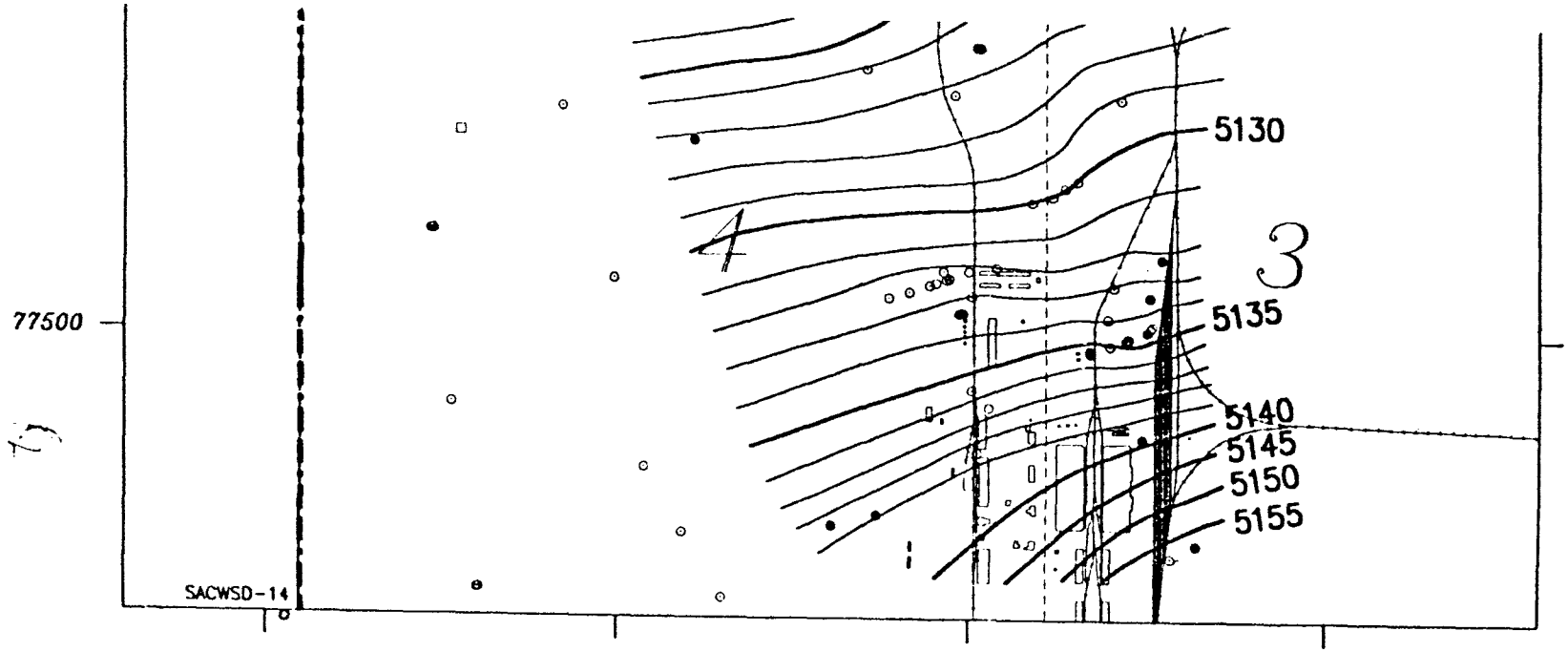
5105
5110
5115
5120
5125
28
27
34
33
187500
185000
182500
180000
SACWSD-02
SACWSD-17
SACWSD-03
SACWSD-05



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number
- 5 ft. Contour Line
- 1 ft. Contour Line
- 5120 Elevation in Feet Mean Sea Level

Measurement Wells

- ■ Extraction Well
- ● Monitoring Well
- ▲ Recharge Well

north

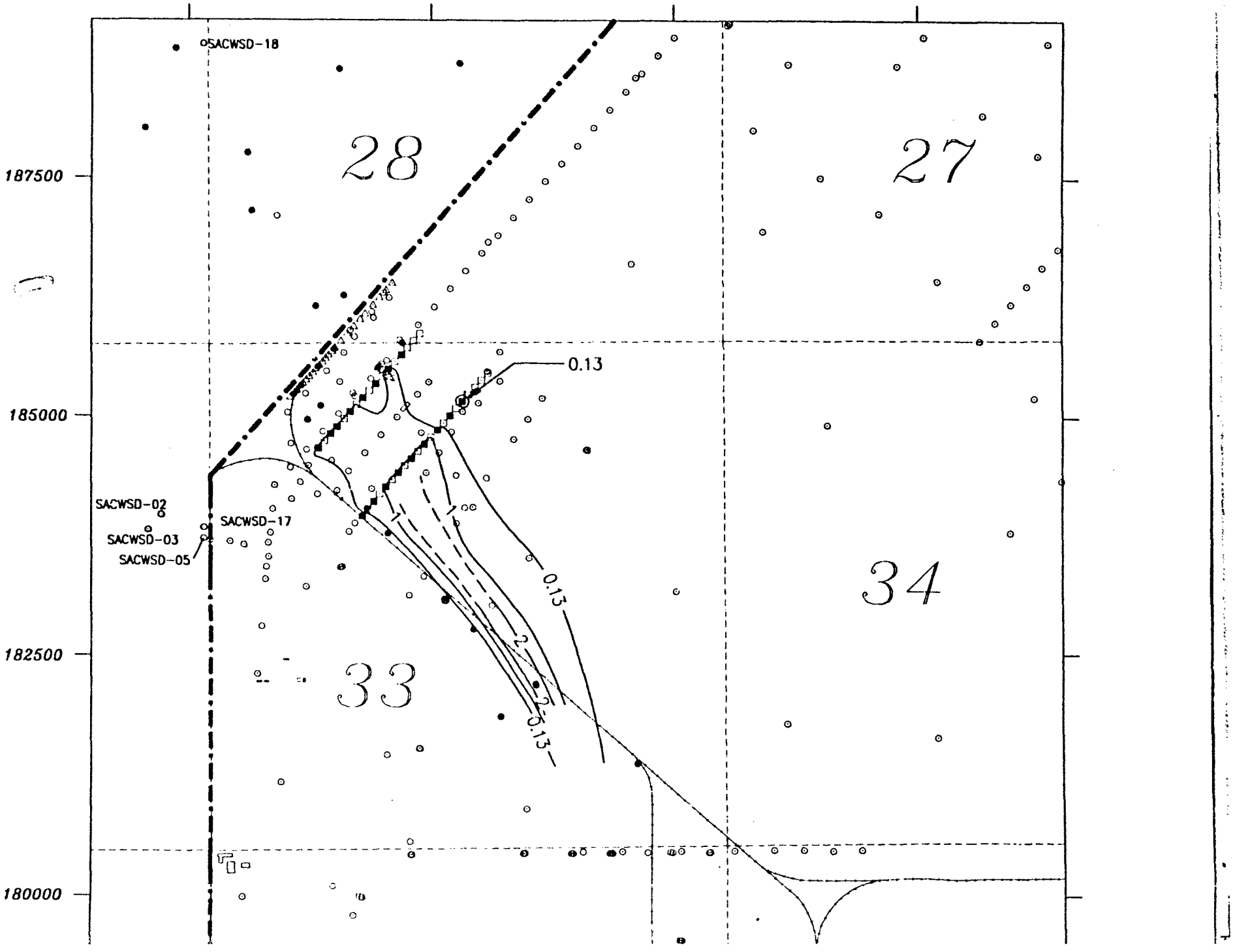
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 12A

Water Table Elevation
April 1990

0 600 1200 2400
FEET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SACWSD-03
SACWSD-05
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0.13
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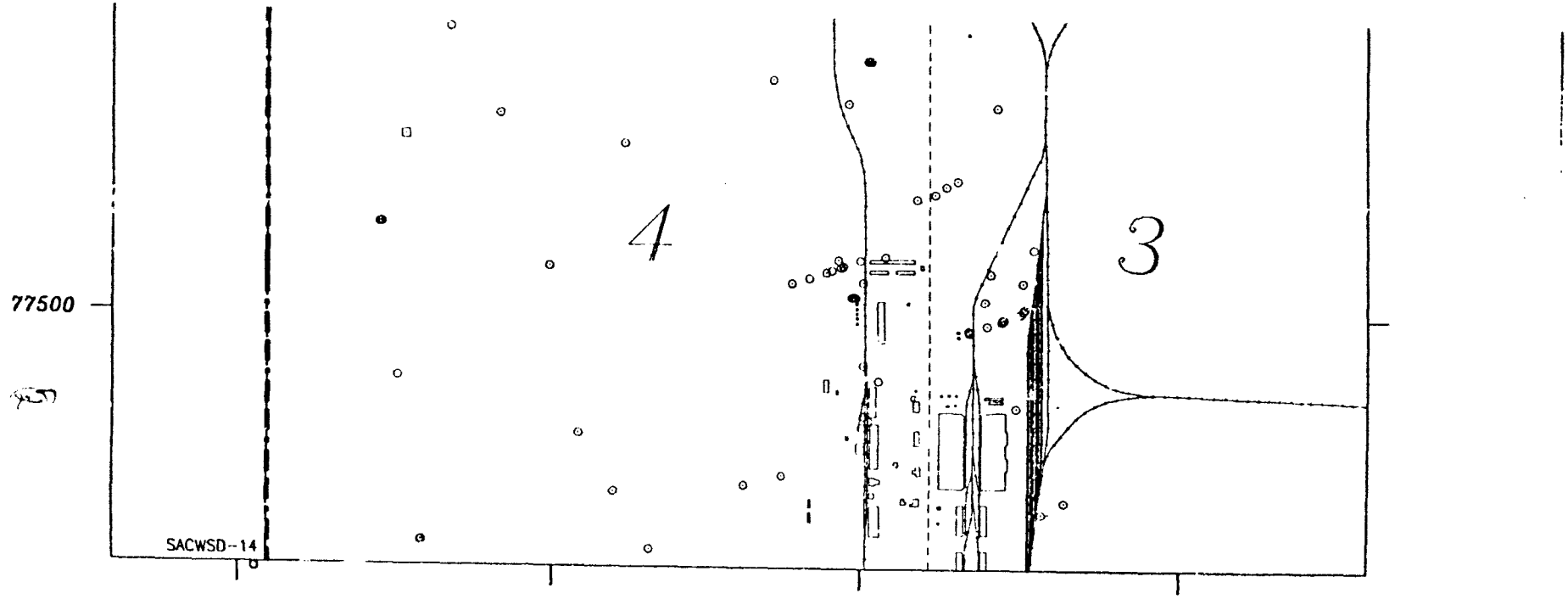


Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

Measurement Wells

- Extraction Well
- Monitoring Well
- Recharge Well

0.13 Certified Reporting Limit

north

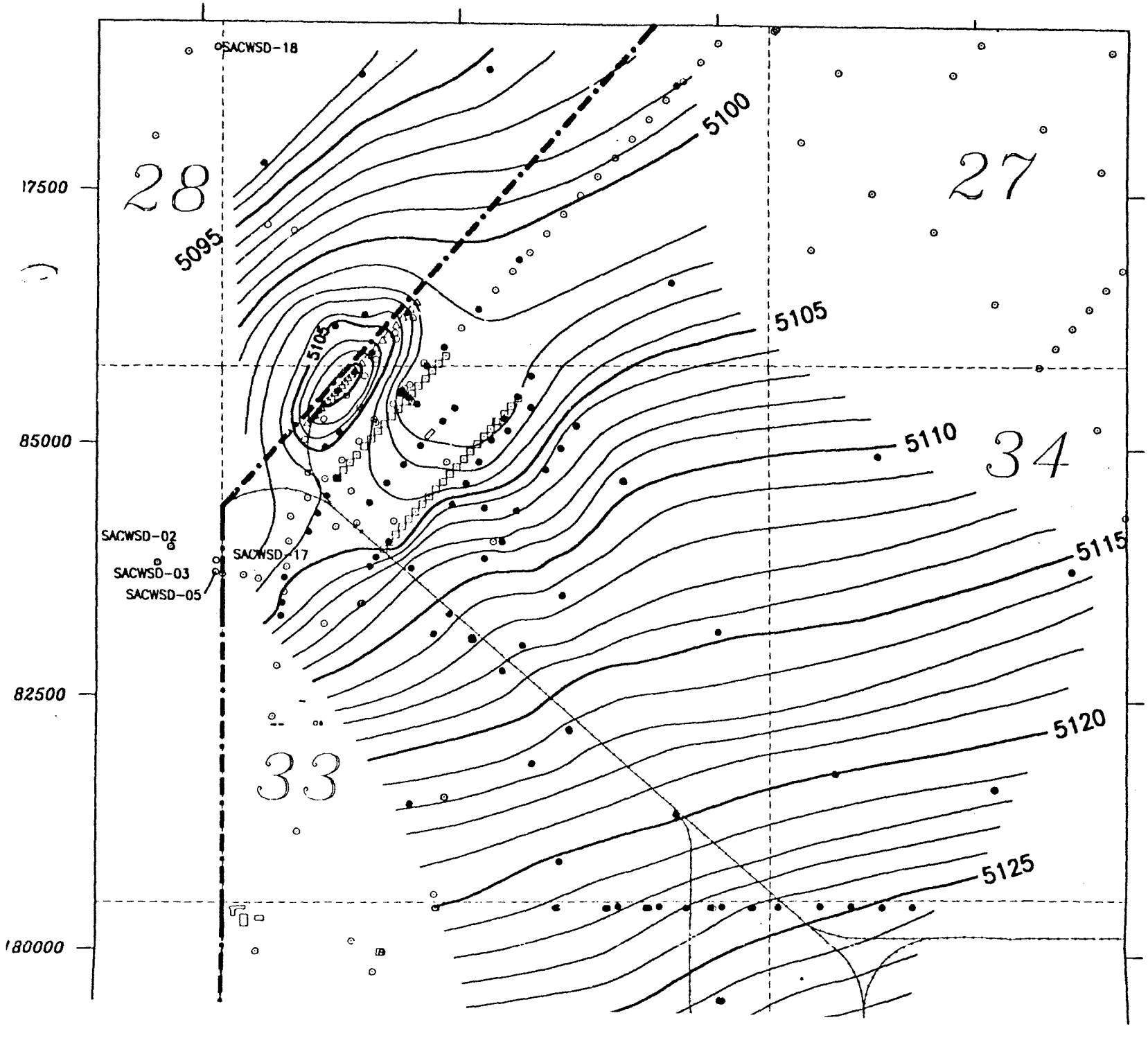
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 11B

DBCP Concentrations, ug/l
January 1990

0 600 1200 2400
FEET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27
34
33
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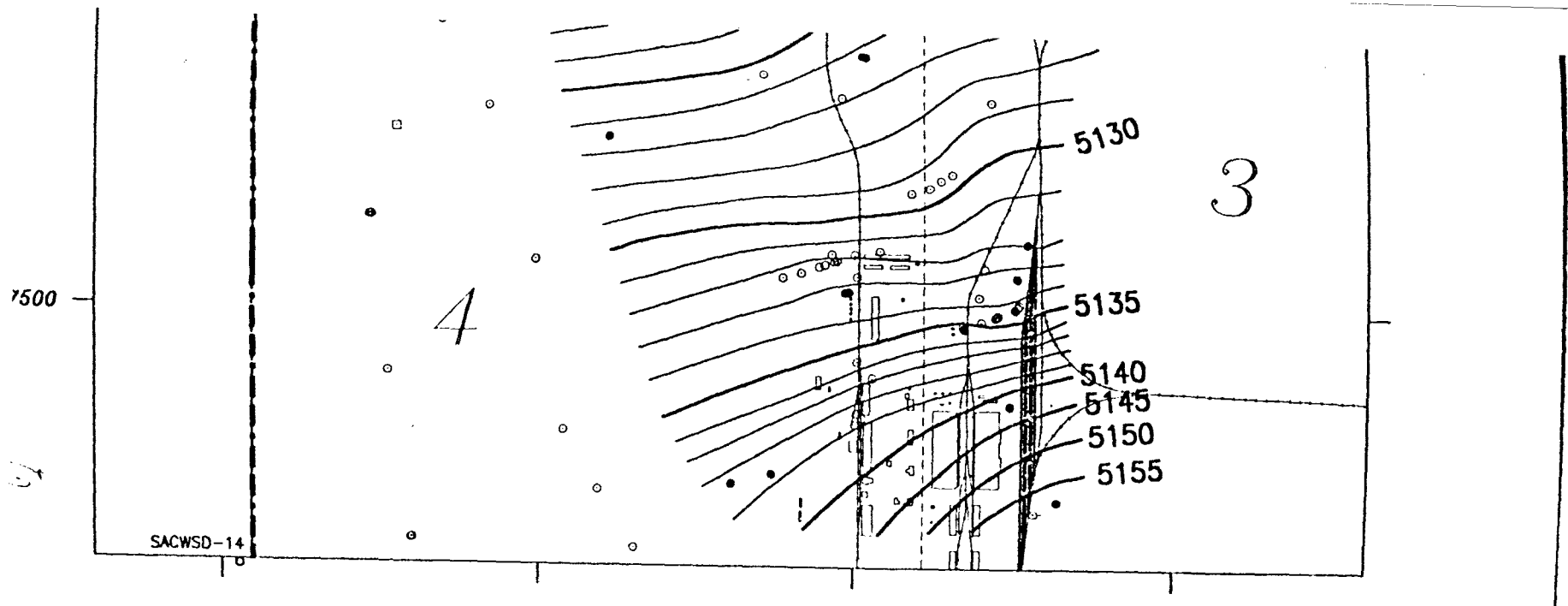
5100
5105
5110
5115
5120
5125
SACWSD-02
SACWSD-03
SACWSD-05
SACWSD-17
17500
85000
82500
180000



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number
- 5 ft. Contour Line
- 1 ft. Contour Line
- 5120 Elevation in Feet Mean Sea Level

Measurement Wells

- ■ Extraction Well
- ● Monitoring Well
- ▲ Recharge Well

north

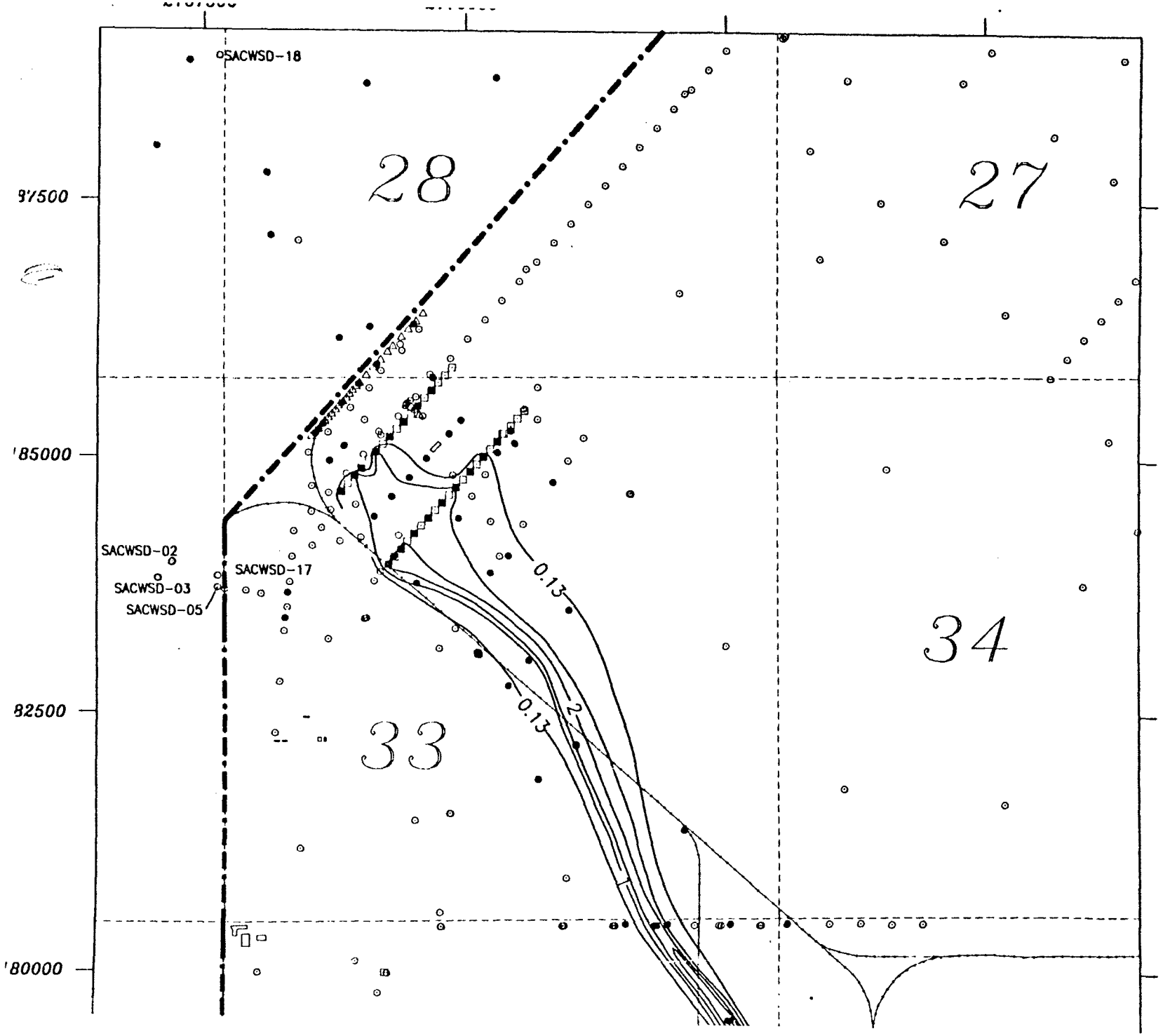
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 11A

Water Table Elevation
January 1990

0 600 1200 2400
FEET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27
34
33
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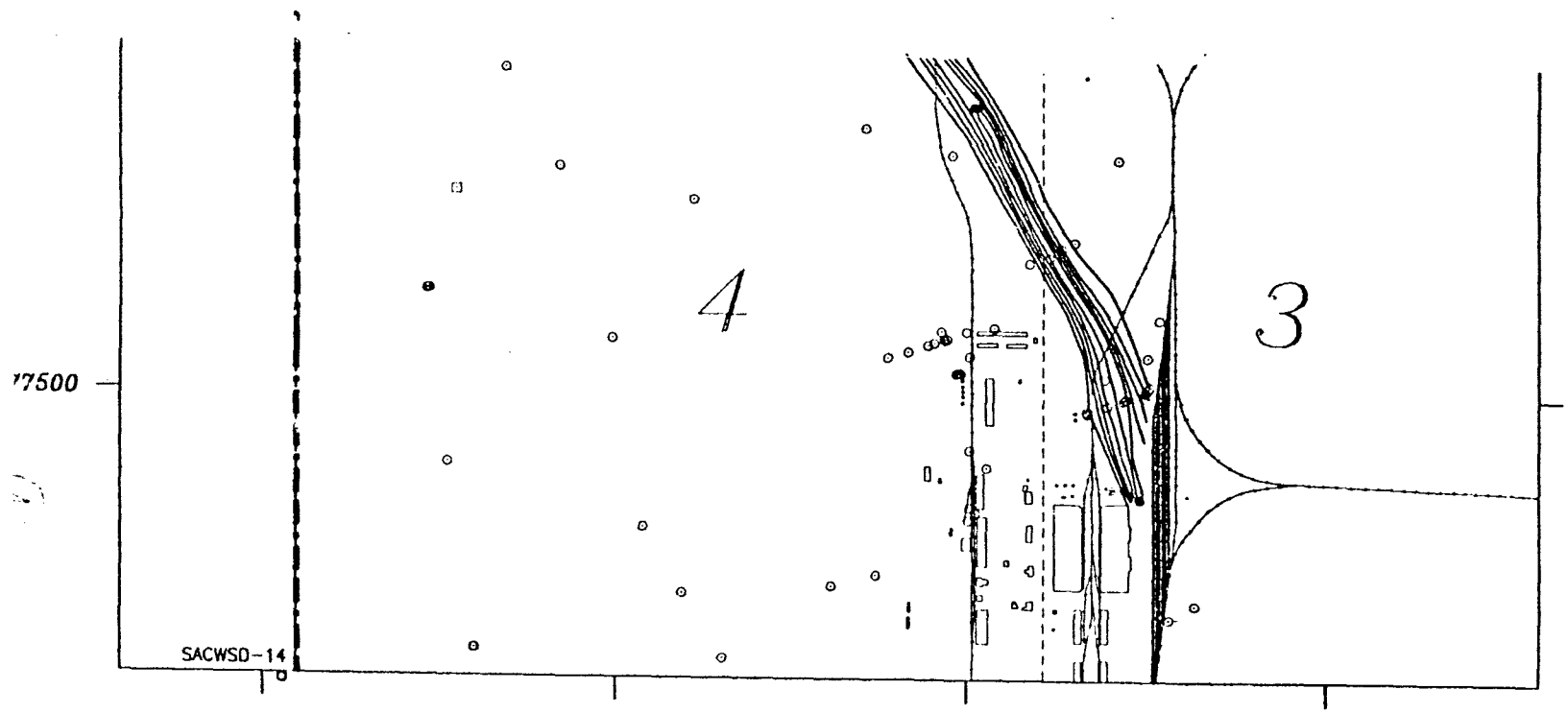
85000
82500
80000
SACWSD-02
SACWSD-17
SACWSD-03
SACWSD-05
0.13
2
0.13



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

Measurement Wells

- Extraction Well
- Monitoring Well
- Recharge Well

0.13 Certified Reporting Limit

north

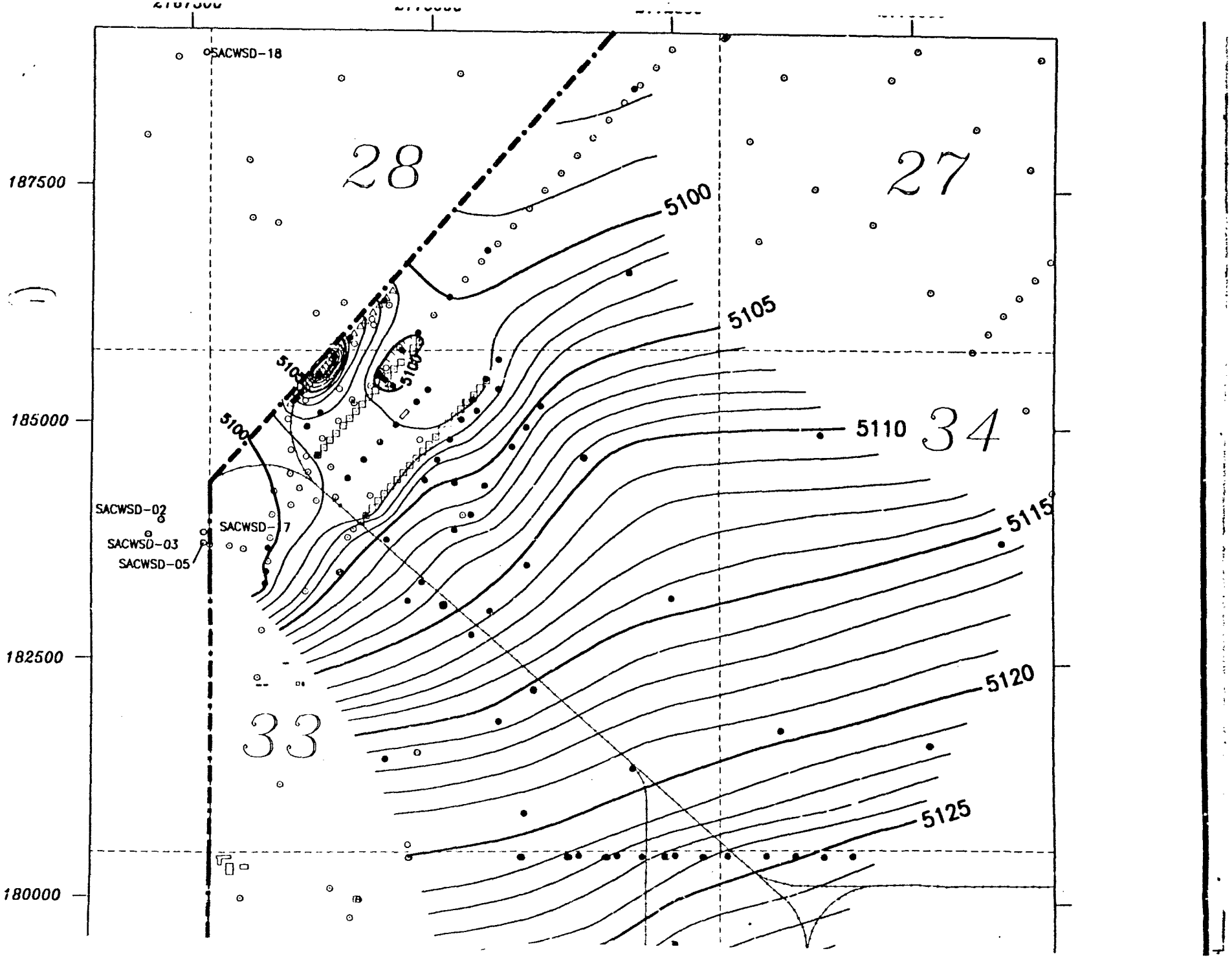
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 10B

DBCP Concentrations, ug/l
October 1989

0 600 1200 2400
FEET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5105
5110
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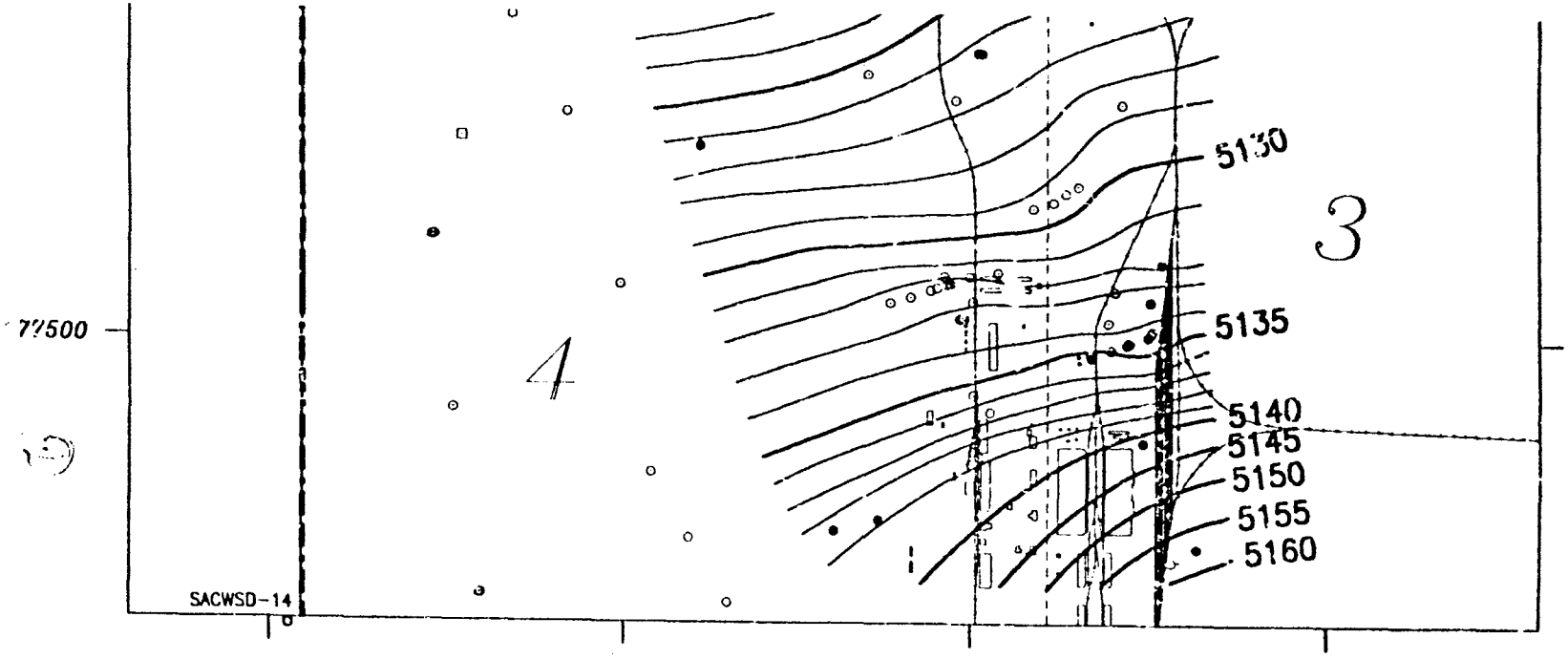
5120
5125
187500
185000
182500
180000
SACWSD-02
SACWSD-03
SACWSD-05
SACWSD-07



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number
- 5 ft. Contour Line
- 1 ft. Contour Line
- 5120 Elevation in Feet Mean Sea Level

Measurement Wells

- ■ Extraction Well
- ● Monitoring Well
- ▲ Recharge Well

north

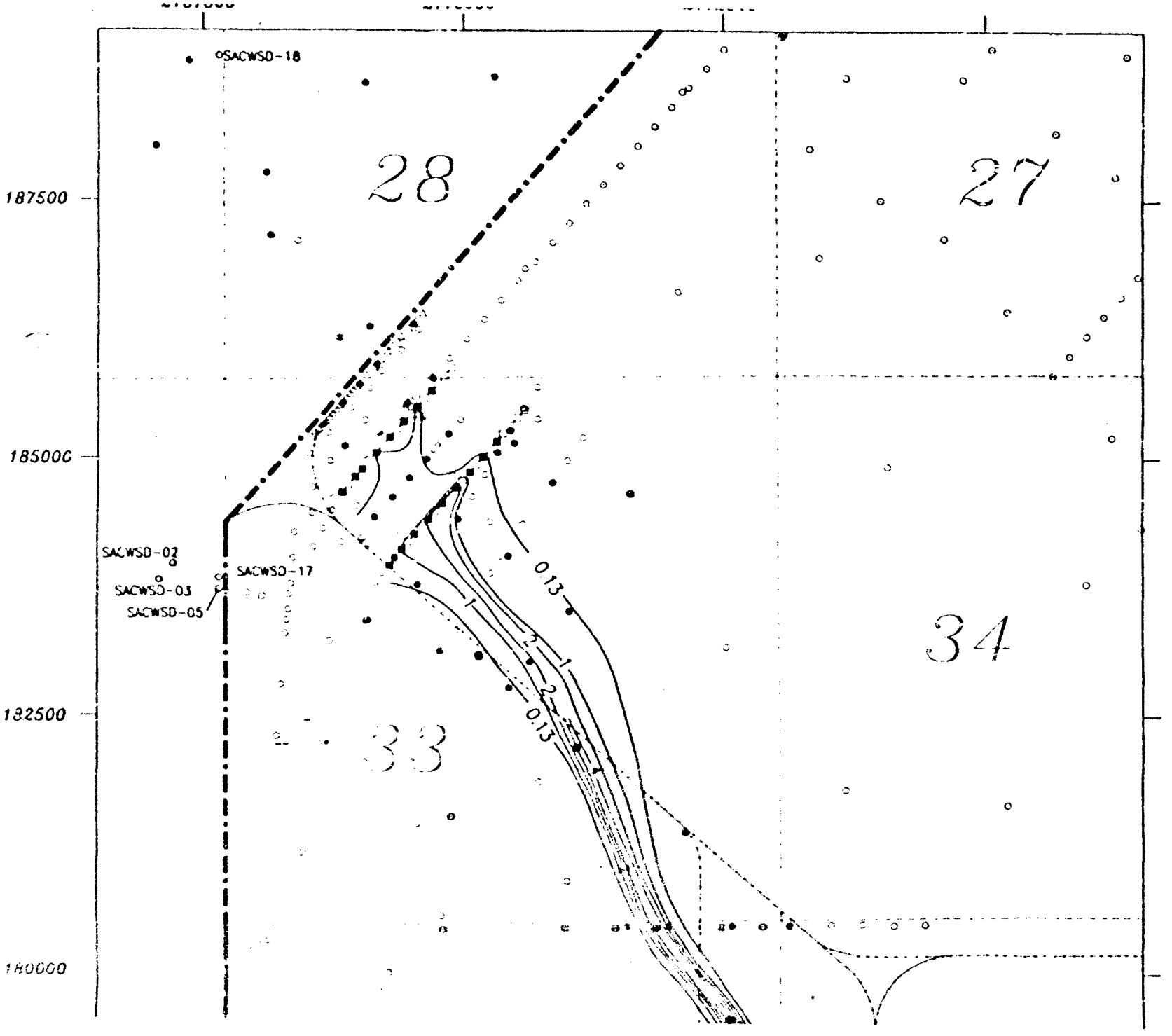
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 10A

Water Table Elevation
October 1969

0 600 1200 2400
FEET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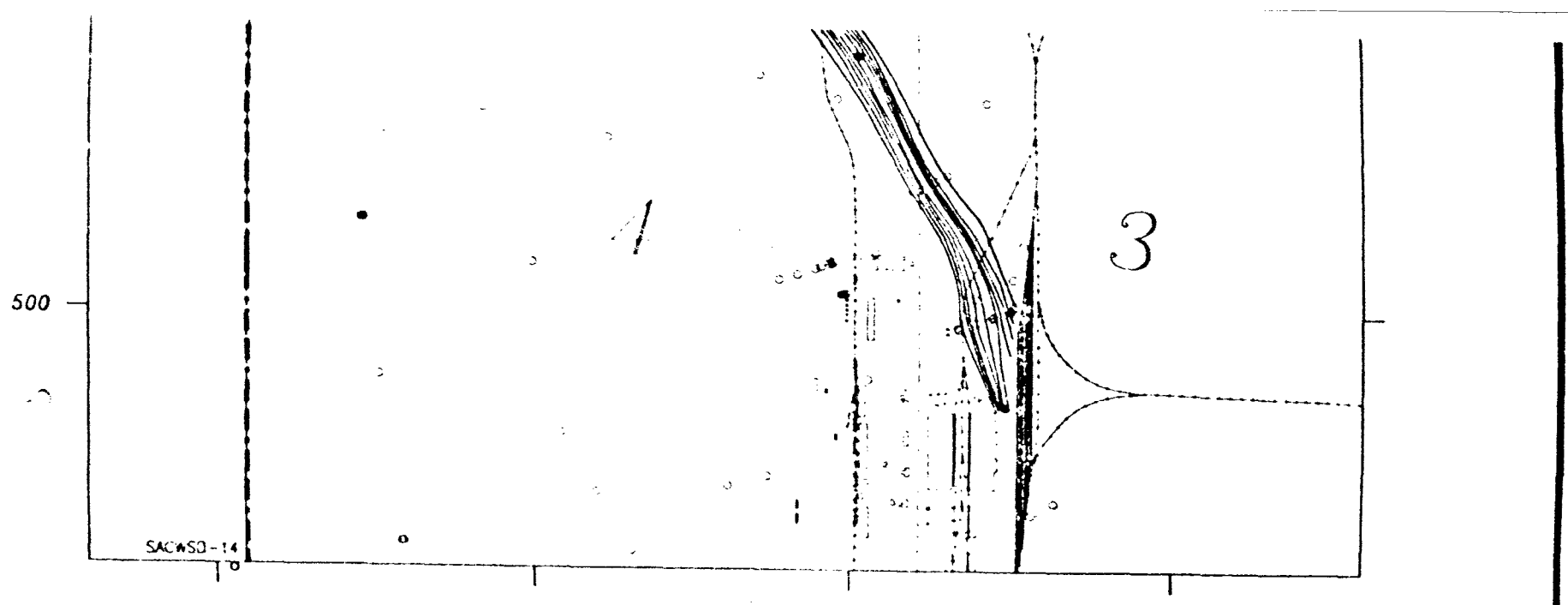


Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

Measurement Wells

- ■ Extraction Well
- ● Monitoring Well
- ▲ Recharge Well

0.13 Certified Reporting Limit

north

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

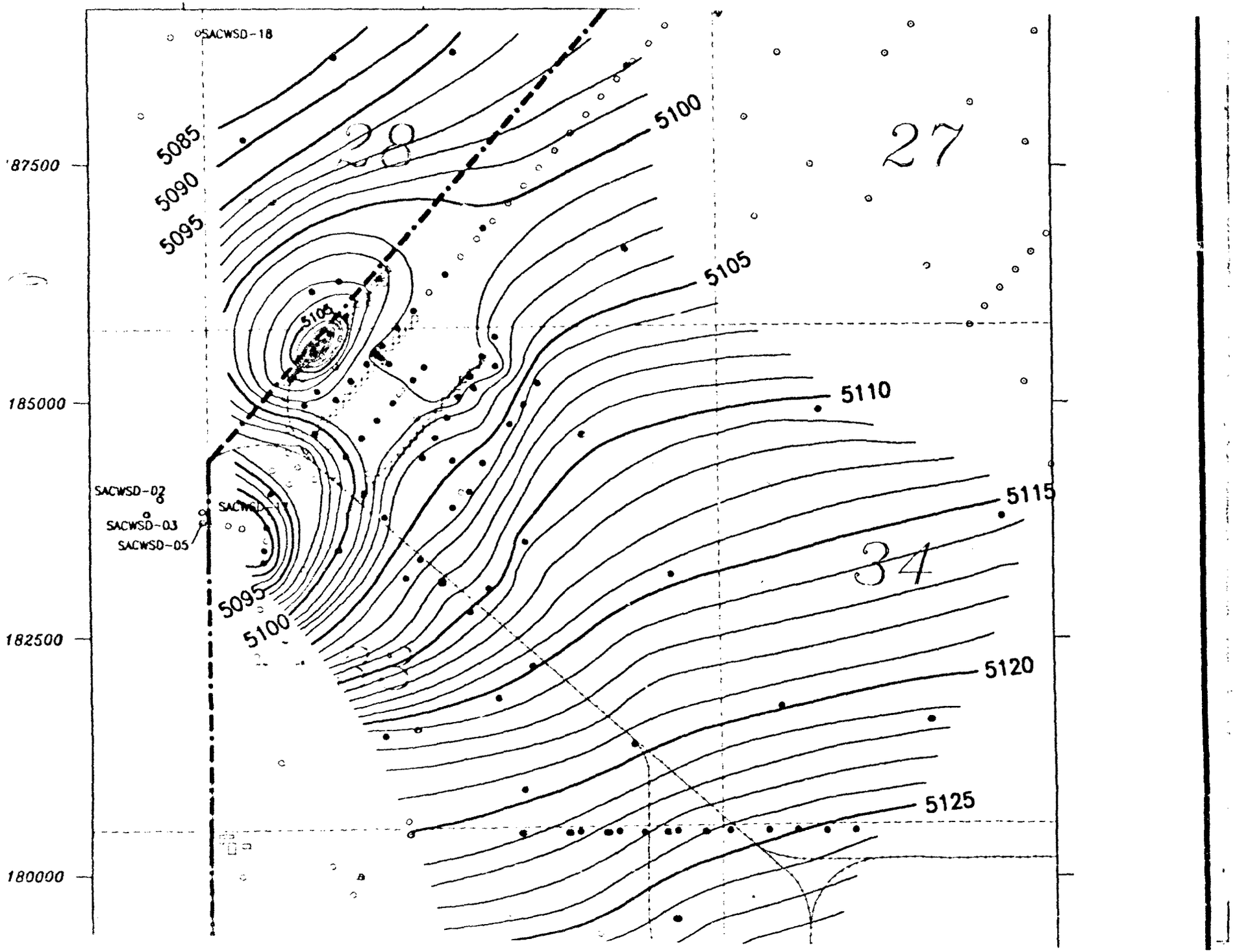
ROCKY MOUNTAIN ARSENAL

Figure 9B

DBCP Concentrations, ug/l
July 1989

0 600 1200 2400
FEET

<CEN: DB0789.DWG> <CRD: 02/14/92>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SACWSD-02
SACWSD-03
SACWSD-05
SACWSD-1
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5105
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5120
5125
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185000
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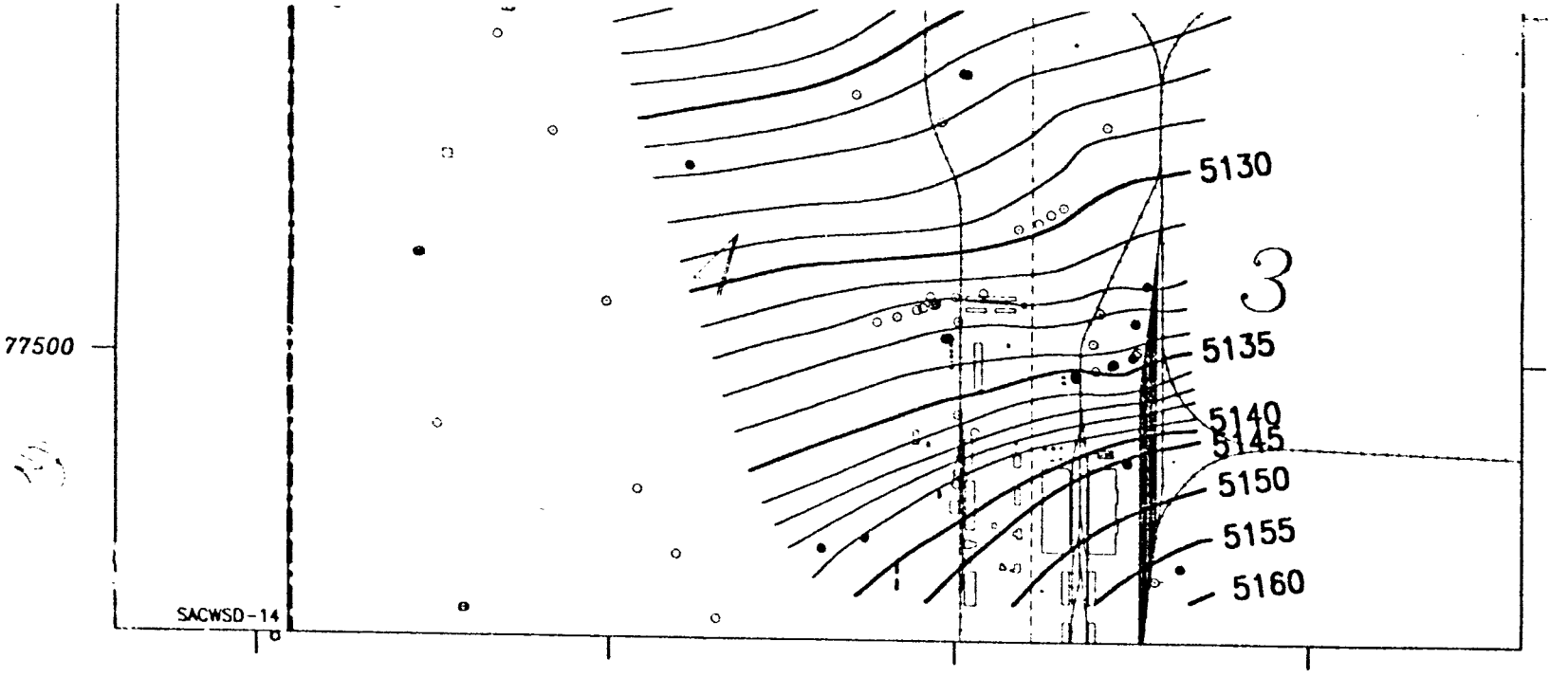
180000



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number
- 5 ft. Contour Line
- 1 ft. Contour Line
- 5120 Elevation in Feet Mean Sea Level

Measurement Wells

- Extraction Well
- Monitoring Well
- Recharge Well

north

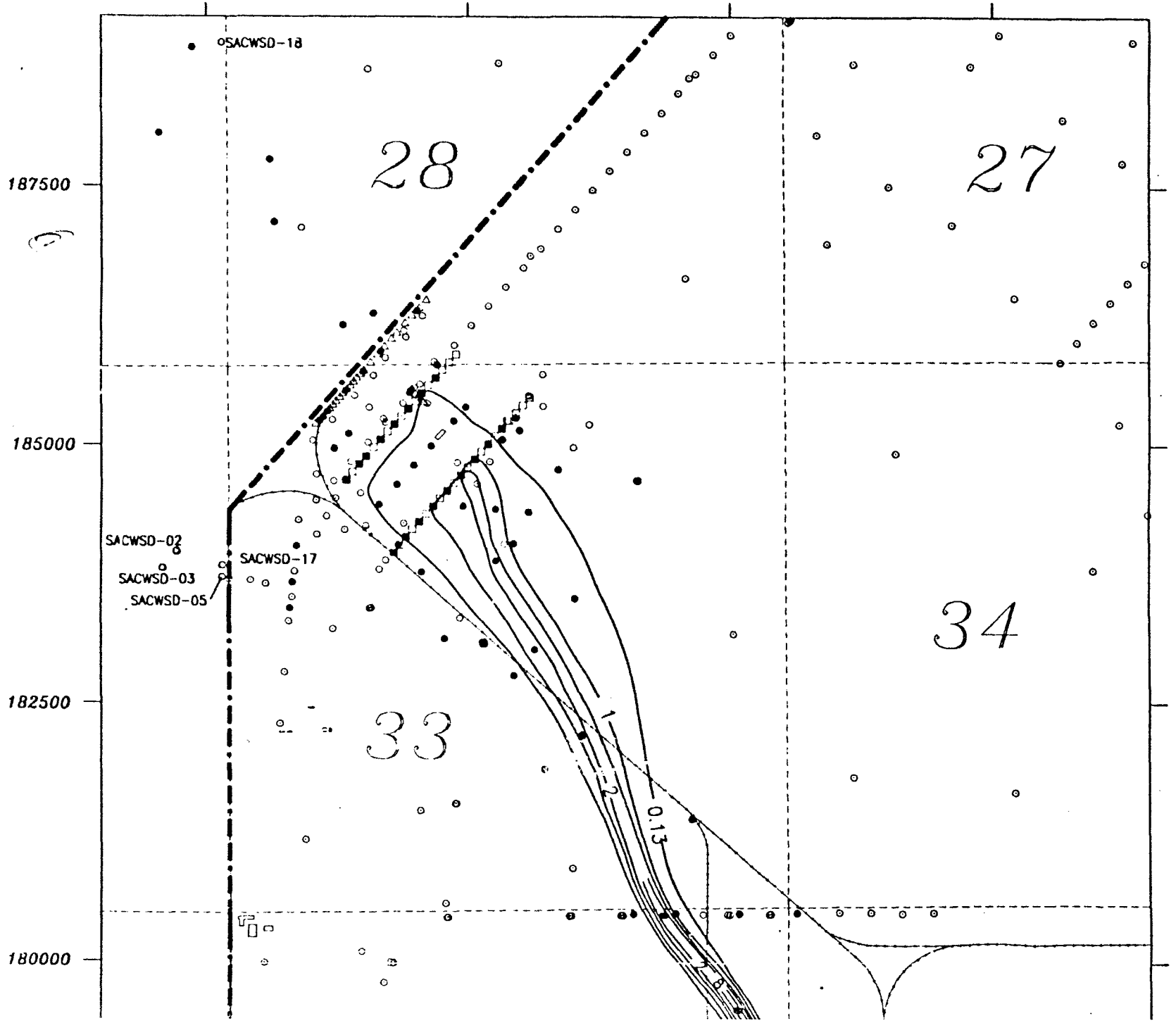
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

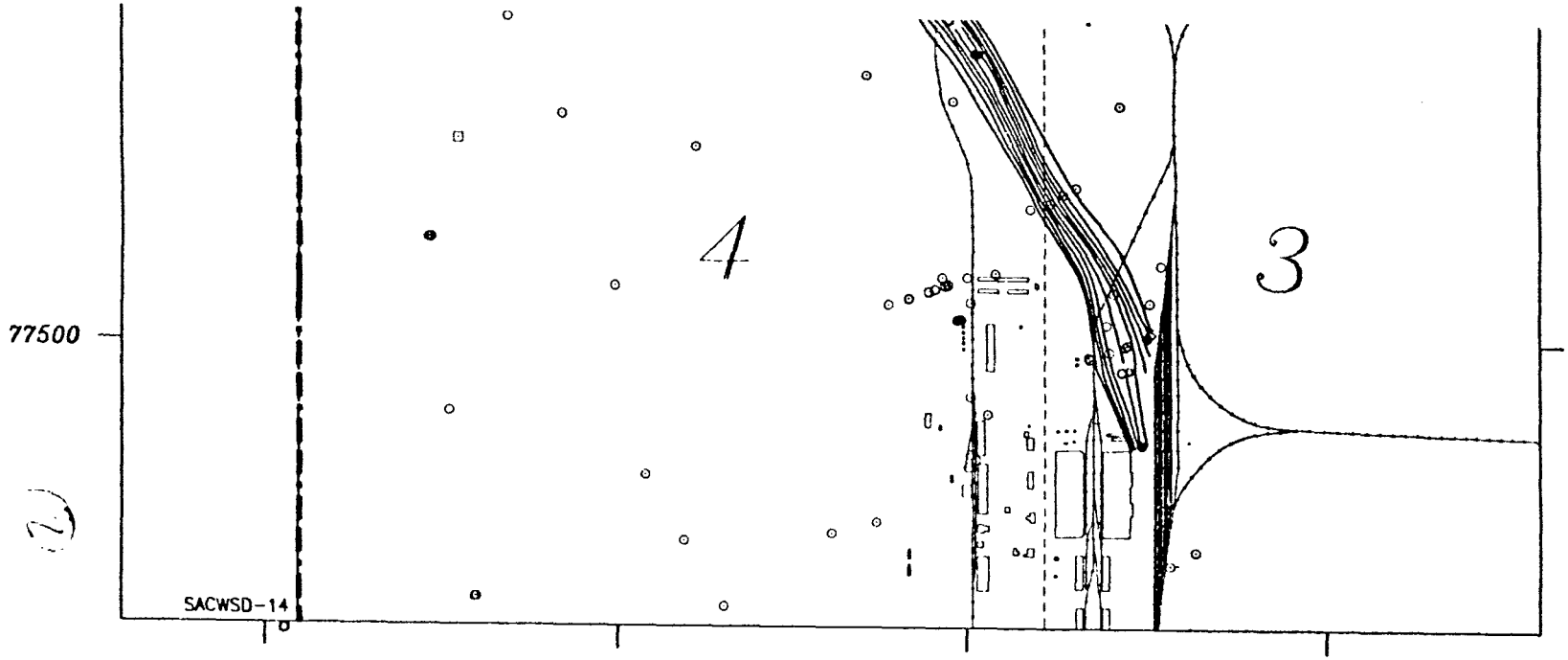
ROCKY MOUNTAIN ARSENAL

Figure 9A

Water Table Elevation
July 1989

0 600 1200 2400
FEET


SACWSD-18
28
27
187500
185000
SACWSD-02
SACWSD-17
SACWSD-03
SACWSD-05
34
182500
33
1
2
0.13
180000



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

Measurement Wells

- Extraction Well
- Monitoring Well
- Recharge Well

0.13 Certified Reporting Limit

north

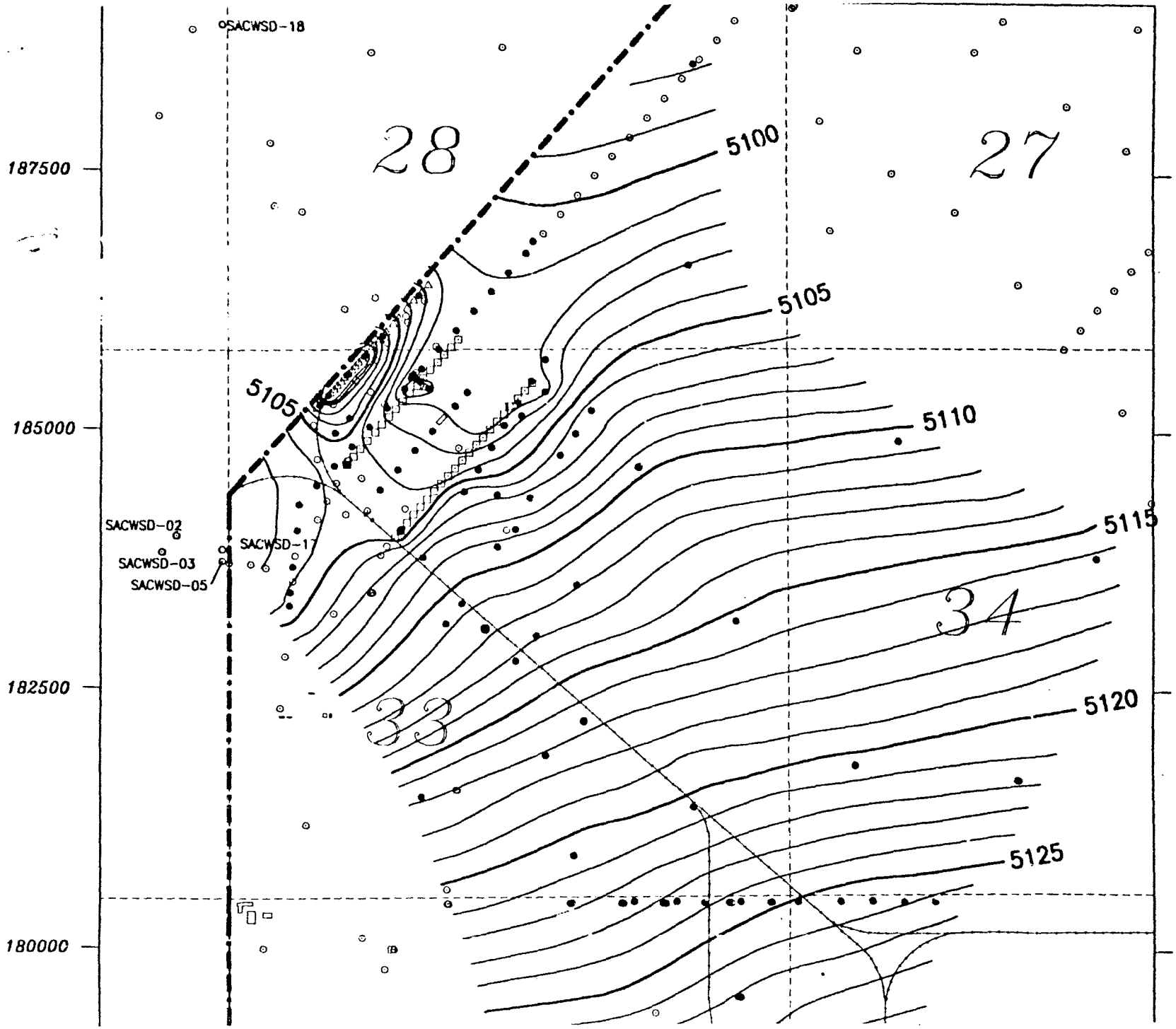
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

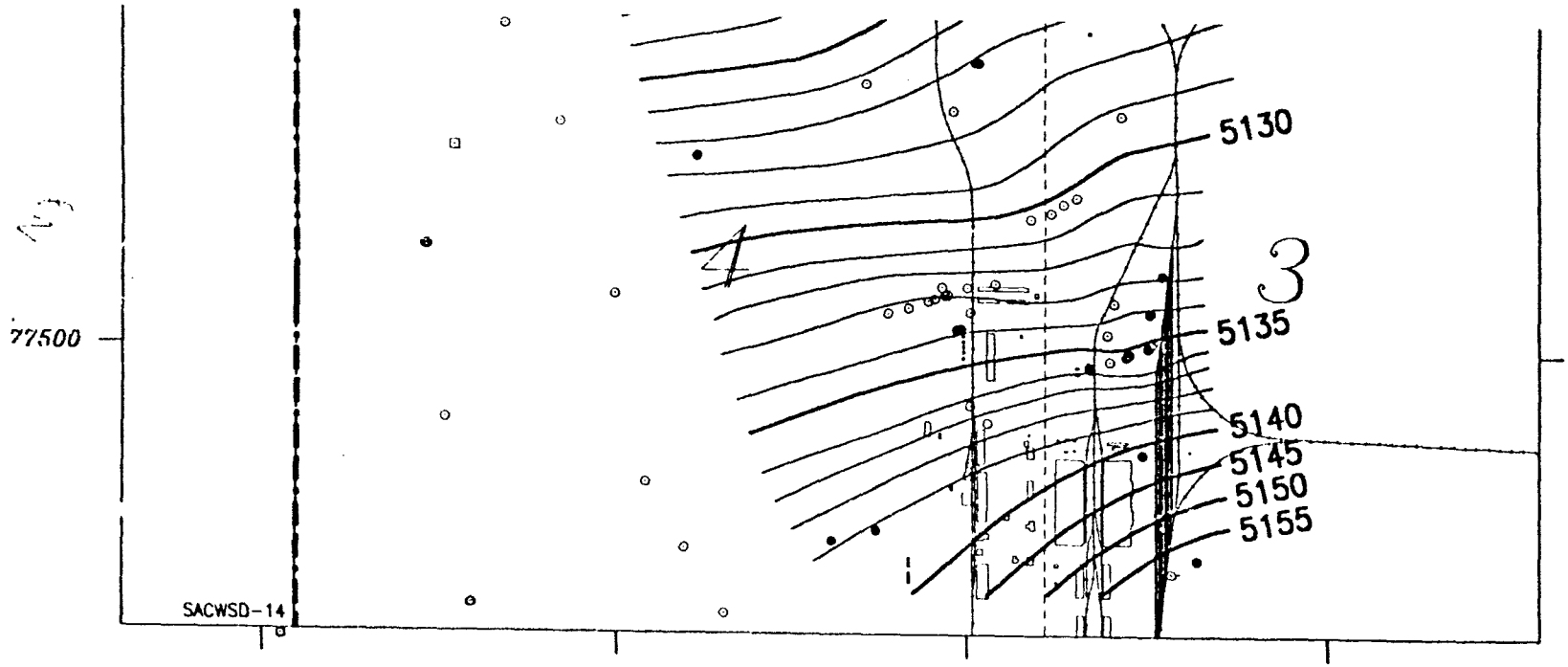
ROCKY MOUNTAIN ARSENAL

Figure 8B

DBCP Concentrations, ug/l
April 1989

0 600 1200 2400
FEET


SACWSD-18
28
27
5100
5105
5105
5110
5115
5120
5125
34
33
SACWSD-02
SACWSD-03
SACWSD-05
SACWSD-17
187500
185000
182500
180000



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number
- 5 ft. Contour Line
- 1 ft. Contour Line
- 5120 Elevation in Feet Mean Sea Level

Measurement Wells

- Extraction Well
- Monitoring Well
- Recharge Well

north

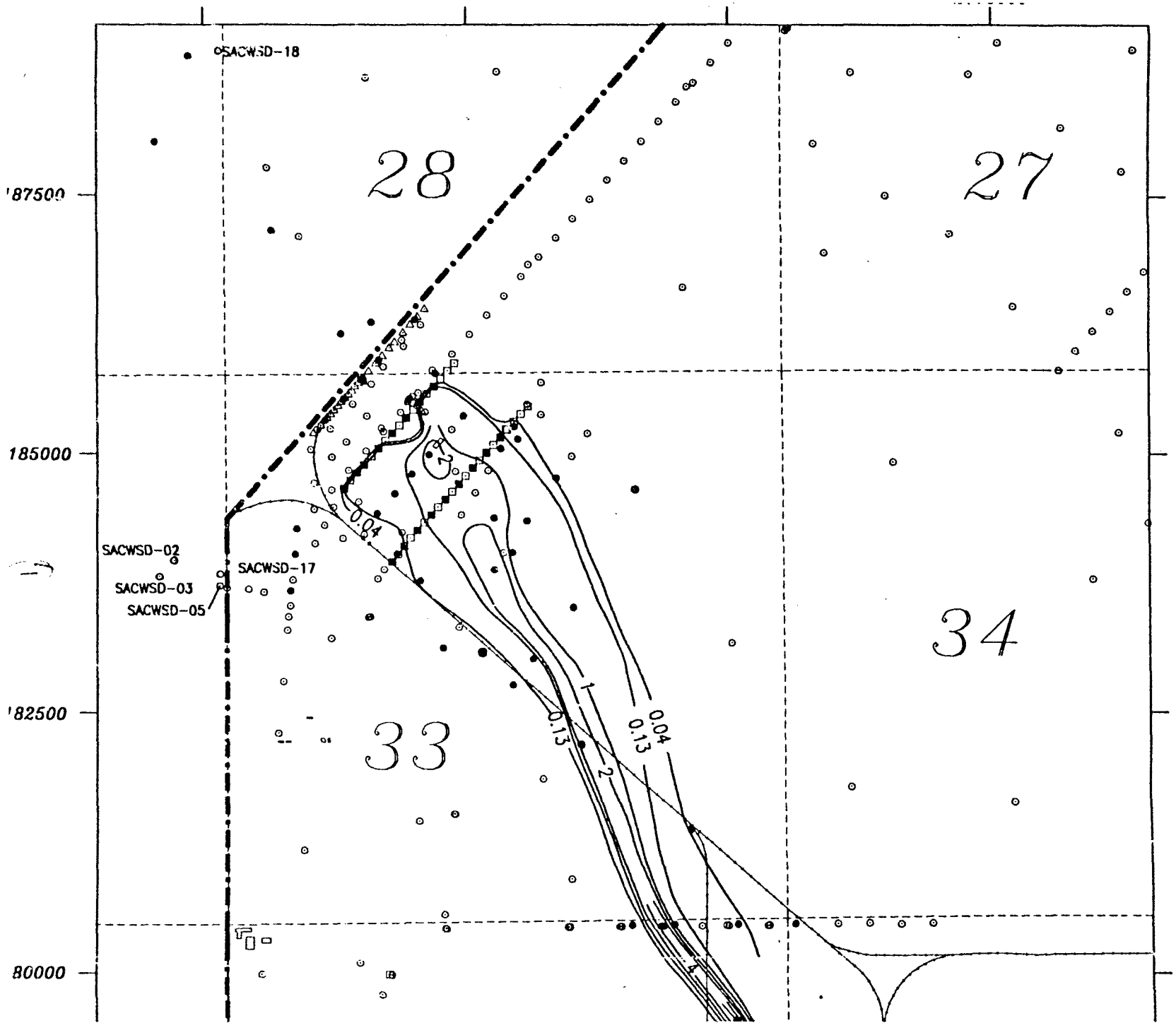
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

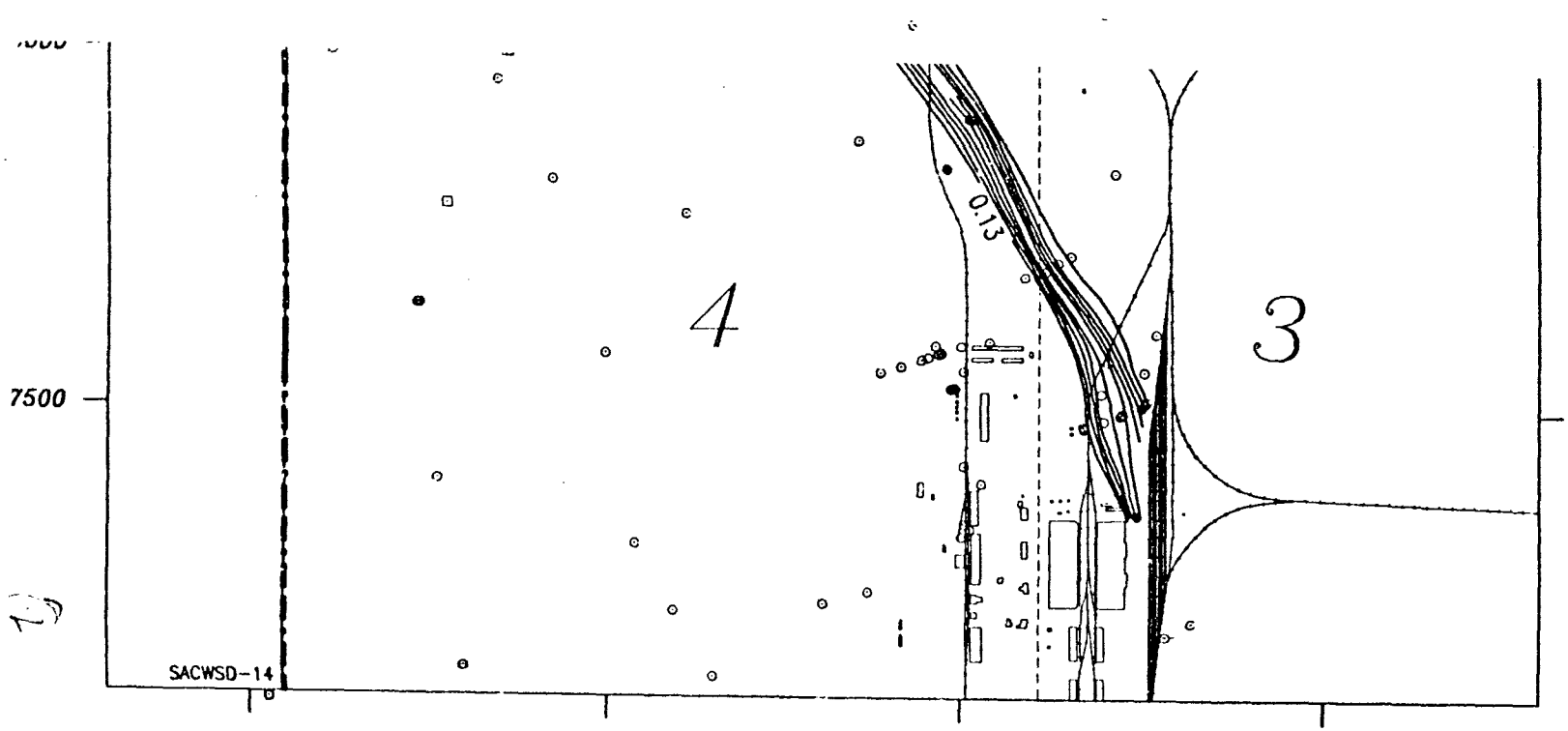
ROCKY MOUNTAIN ARSENAL

Figure 8A

Water Table Elevation
April 1989

0 500 1200 2400
FEET


SACWSD-18
28
27
34
33
187500
185000
182500
180000
SACWSD-02
SACWSD-17
SACWSD-03
SACWSD-05
2
0.04
1
0.13
2
0.04
0.13



Legend

- Extraction Well
- Monitoring Well
- Recharge Well
- Railroad
- Buildings
- RMA Boundary
- Section Boundary
- 33 Section Number

Measurement Wells

- ■ Extraction Well
- ● Monitoring Well
- ▲ Recharge Well

0.04 Certified Reporting Limit

north

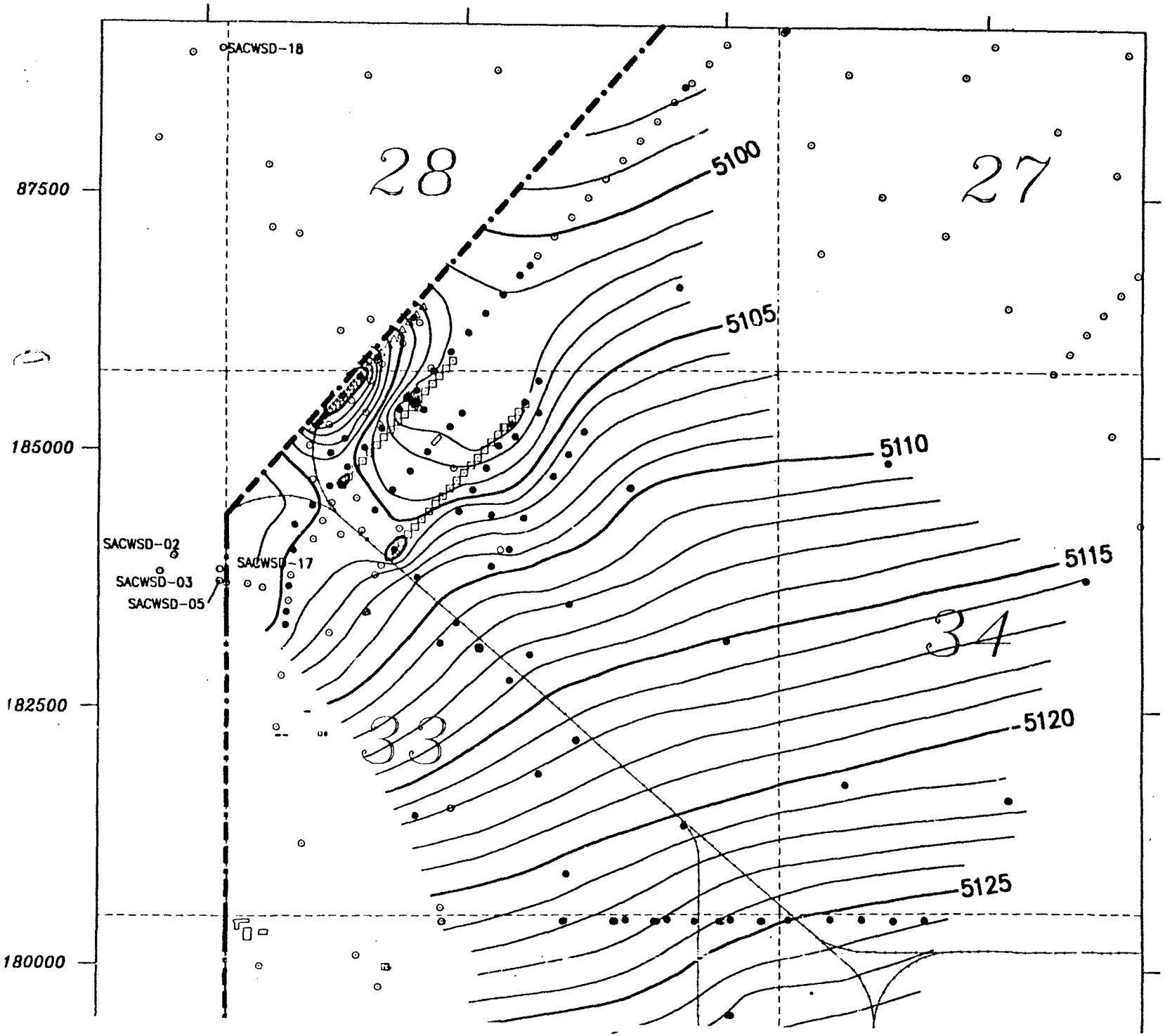
MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

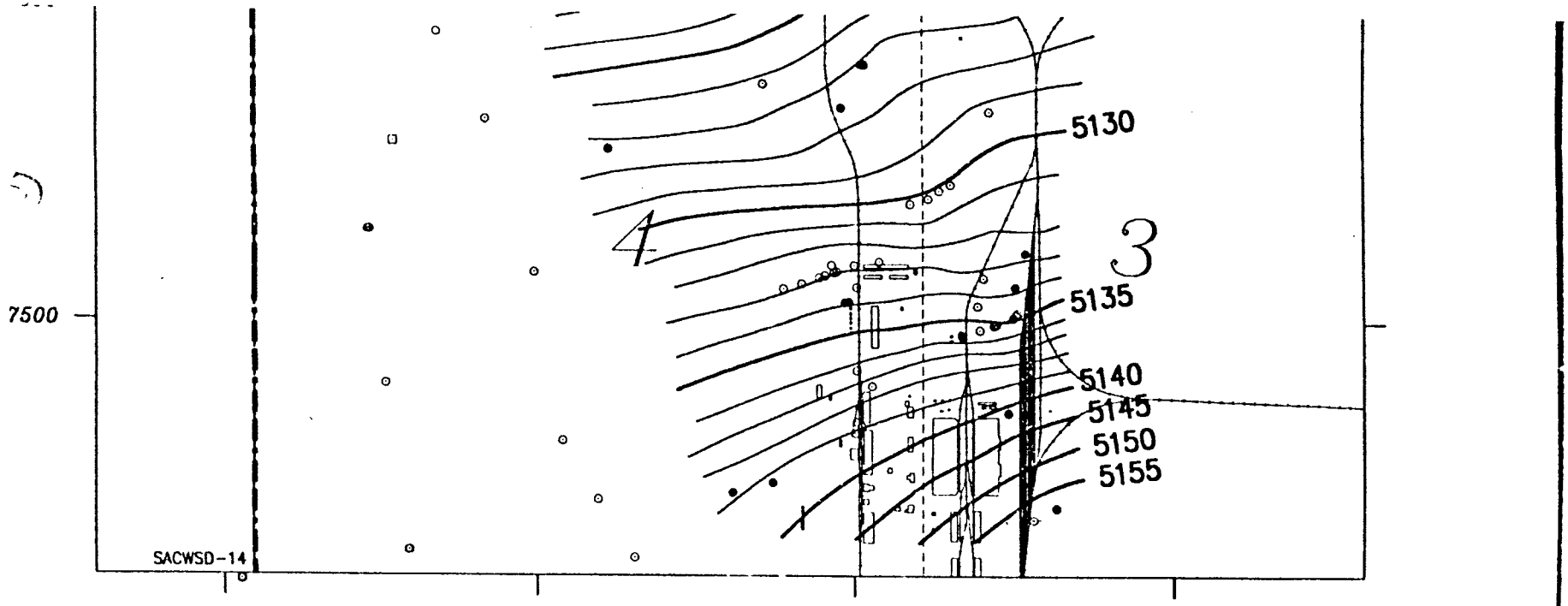
ROCKY MOUNTAIN ARSENAL

Figure 7B

DBCP Concentrations, ug/l
January – February 1989

0 600 1200 2400
FEET


SACWSD-18
28
27
5100
5105
5110
5115
5120
5125
87500
185000
182500
180000
SACWSD-02
SACWSD-17
SACWSD-03
SACWSD-05
34
33



Legend

□	Extraction Well
○	Monitoring Well
△	Recharge Well
———	Railroad
▭	Buildings
▬ ▪ ▬ ▪	RMA Boundary
- - - - - - -	Section Boundary
33	Section Number
———	5 ft. Contour Line
———	1 ft. Contour Line
5120	Elevation in Feet Mean Sea Level

Measurement Wells

■	Extraction Well
●	Monitoring Well
▲	Recharge Well

north

MORRISON KNUDSEN CORPORATION
ENVIRONMENTAL SERVICES GROUP

ROCKY MOUNTAIN ARSENAL

Figure 7A

Water Table Elevation
January 1989

0 600 1200 2400
FEET

5.0 CONCLUSIONS

The ICS treatment system performed very well during the 1989-1990 period. The treatment plant stream factors were greater than 99.9 percent for both 1989 and 1990. The treatment plant effectively removed DBCP to below detectable levels.

The DBCP plume continues to appear to decrease in concentration. Average concentrations of treatment plant influent were about 0.30 ug/l during 1989 and 0.22 ug/l during 1990.

The alluvial aquifer exhibited approximately the same general flow patterns in 1989 and 1990 as in previous years. However, increased pumping during the summer and fall from the SACWSD wells adjacent to the RMA appears to be creating a greater cone of depression than in previous years. This is resulting in a generally lower water table in the vicinity of the ICS, and reduces the amount of water that can be pumped from the ICS extraction wells.

Very low levels of DBCP (below USATHAMA certified reporting limits) were reported in two SACWSD wells in the spring of 1989 and spring of 1990. Data from monitoring wells installed during 1990 have indicated that a small amount of DBCP apparently bypassed the ICS on the south, and was being pulled towards the SACWSD production wells. The extremely low levels of DBCP which may have entered the SACWSD system were treated by the adsorbers at the Klein (SACWSD) water treatment plant or prior to October, 1989, at temporary Granular Activated Carbon treatment facilities operated by SACWSD.

When bypass was confirmed, the Army, EPA, Colorado Department of Health (CDH), South Adams County Water and Sanitation District (SACWSD) and Tri-County Health Department (TCH) were notified of

the sampling results. Engineering design, aimed at stopping all bypass, was completed in the fall of 1990. With the concurrence of all parties, the Rail Classification Yard/Motor Pool Area IRA was modified to include the proposed improvements to the ICS. All improvements to the system were completed and operating in September, 1991.

APPENDIX A

TABLE A-1

WATER LEVEL MEASUREMENTS
JANUARY 12, 1989

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
03001	75.10	5135.20	5210.30	
03002	67.15	5129.27	5196.42	
03005	22.10	5175.11	5197.21	
03008	62.87	5157.71	5220.58	
03009	75.79	5134.95	5210.74	
03010	70.35	5135.87	5206.22	
03516	62.57	5125.33	5187.90	
03517	56.74	5125.40	5182.14	
03518	48.52	5125.61	5174.13	
03519	59.47	-998.00	5185.42	
03522	71.85	5132.35	5204.20	
03523	66.00	5140.48	5206.48	
03526	62.28	5125.00	5187.28	
04010	68.13	5127.44	5195.57	
04013	69.76	5122.95	5192.71	
04017	63.13	5124.07	5187.20	
04019	62.71	5124.50	5187.21	
04021	70.83	5122.49	5193.32	
04024	70.77	5121.80	5192.57	
04026	65.20	5127.01	5192.21	
04030	65.37	5133.88	5199.25	
04034	61.77	5125.36	5187.13	
04524	60.30	5138.93	5199.23	
04525	61.62	5139.44	5201.06	
04527	63.00	5124.21	5187.21	
04528	68.75	5123.10	5191.85	
04529	70.78	5122.49	5193.27	
04532	64.72	5124.73	5189.45	
28016	45.00	5100.88	5145.88	
28017	44.61	5101.01	5145.62	
28018	47.45	5101.31	5148.76	
28019	46.05	5101.43	5147.48	
28020	43.13	5100.73	5143.86	
28021	43.06	5101.28	5144.34	
28022	35.11	5108.47	5143.58	
28023	36.46	5097.84	5134.30	
28027	39.82	5100.77	5140.59	

TABLE A-1 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
28503	48.28	5107.26	5155.54	
28513	37.00	5103.78	5140.78	
33001	54.47	5115.29	5169.76	
33003	53.83	5101.71	5155.54	
33004	48.65	5101.21	5149.86	
33005	48.05	5103.46	5151.51	
33006	53.08	5104.19	5157.27	
33007	50.23	5105.44	5155.67	
33008	50.65	5105.25	5155.90	
33009	52.17	5104.66	5156.83	
33010	50.33	5104.79	5155.12	
33011	47.13	5105.06	5152.19	
33012	0.00	-997.00	5164.12	NO WELL
33014	54.65	5105.57	5160.22	
33017	58.10	5116.92	5175.02	
33018	63.58	5105.12	5168.70	
33025	54.82	5102.05	5156.87	
33030	57.18	5116.90	5174.08	
33033	40.85	5109.75	5150.60	
33038	67.39	5104.16	5171.55	
33039	53.14	5106.27	5159.41	
33040	73.65	5107.35	5181.00	
33041	69.45	5108.43	5177.88	
33042	55.00	5109.88	5164.88	
33043	59.32	5112.07	5171.39	
33044	61.88	5113.21	5175.09	
33045	63.60	5113.77	5177.37	
33046	58.55	5117.41	5175.96	
33047	69.57	5120.82	5190.39	
33051	55.00	5102.14	5157.14	
33055	54.54	5101.82	5156.36	
33056	52.24	5101.37	5153.61	
33057	50.80	5100.90	5151.70	
33058	47.55	5101.09	5148.64	
33059	57.19	5105.61	5162.80	
33060	51.61	5108.93	5160.54	
33062	68.69	5106.67	5175.36	

TABLE A-1 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33064	50.90	5112.34	5163.24	
33070	51.38	5103.70	5155.08	
33071	50.37	5102.73	5153.10	
33072	51.40	5101.76	5153.16	
33073	43.79	5101.57	5145.36	
33500	42.17	5109.85	5152.02	
33501	34.00	5117.66	5151.66	
33502	46.33	5113.22	5159.55	
33505	62.81	5103.26	5166.07	
33506	45.92	5102.59	5148.51	
33507	43.77	5101.91	5145.68	
33508	0.00	-999.00	5156.29	DRY
33509	46.59	5102.49	5149.08	
33510	47.22	5106.39	5153.61	
33511	46.00	5106.46	5152.46	
33512	48.59	5106.68	5155.27	
33514	56.35	5120.47	5176.82	
33530	53.23	5114.34	5167.57	
33531	52.95	5111.31	5164.26	
33533	43.95	5102.81	5146.76	
33534	56.00	5103.09	5159.09	
33576	37.05	5117.38	5154.43	
33577	48.82	5107.38	5156.20	
33578	48.57	5106.68	5155.25	
33579	52.26	5104.76	5157.02	
33580	52.63	5103.98	5156.61	
33581	54.08	5105.30	5159.38	
33582	48.64	5104.59	5153.23	
33583	45.12	5109.38	5154.50	
34002	70.27	5121.59	5191.86	
34005	67.78	5116.02	5183.80	
34008	55.14	5110.47	5165.61	
34515	46.17	5120.40	5166.57	

Comments are from Shell Field Water Measurement Logs
Water Elevation - 997.00 = see comment
Water Elevation - 998.00 = water below bottom of well screen
Water Elevation - 999.00 = dry well

TABLE A-2

WATER LEVEL MEASUREMENTS
APRIL 4, 1989

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
03001	75.20	5135.10	5210.30	
03002	67.07	5129.35	5196.42	
03005	21.53	5175.68	5197.21	
03008	62.93	5157.65	5220.58	
03009	75.67	5135.07	5210.74	
03010	70.29	5135.93	5206.22	
03516	62.45	5125.45	5187.90	
03517	56.64	5125.50	5182.14	
03518	48.30	5125.83	5174.13	
03519	59.26	-998.00	5185.42	
03522	71.75	5132.45	5204.20	
03523	66.00	5140.48	5206.48	
03526	61.75	5125.53	5187.28	
04010	68.08	5127.49	5195.57	
04013	69.70	5123.01	5192.71	
04017	63.09	5124.11	5187.20	
04019	62.74	5124.47	5187.21	
04021	70.85	5122.47	5193.32	
04024	70.80	5121.77	5192.57	
04026	65.14	5127.07	5192.21	
04030	65.31	5133.94	5199.25	
04524	60.26	5138.97	5199.23	
04525	61.62	5139.44	5201.06	
04527	62.88	5124.33	5187.21	
04528	68.68	5123.17	5191.85	
04529	70.73	5122.54	5193.27	
04532	64.74	5124.71	5189.45	
28016	45.00	5100.88	5145.88	
28017	44.64	5100.98	5145.62	
28018	47.59	5101.17	5148.76	
28019	46.16	5101.32	5147.48	
28020	42.41	5101.45	5143.86	
28021	43.30	5101.04	5144.34	
28022	35.11	5108.47	5143.58	
28023	36.53	5097.77	5134.30	
28027	39.83	5100.76	5140.59	
28503	49.23	5106.31	5155.54	
28513	37.47	5103.31	5140.78	

TABLE A-2 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33001	54.55	5115.21	5169.76	
33003	54.41	5101.13	5155.54	
33004	49.07	5100.79	5149.86	
33005	48.60	5102.91	5151.51	
33006	53.65	5103.62	5157.27	
33007	51.24	5104.43	5155.67	
33008	51.57	5104.33	5155.90	
33009	53.00	5103.83	5156.83	
33010	51.56	5103.56	5155.12	
33011	48.60	5103.59	5152.19	
33012	0.00	-997.00	5164.12	NO WELL
33014	56.15	5104.07	5160.22	
33017	58.03	5116.99	5175.02	
33018	65.17	5103.53	5168.70	
33025	55.40	5101.47	5156.87	
33030	57.37	5116.71	5174.08	
33033	58.40	-998.00	5150.60	
33038	67.51	5104.04	5171.55	
33039	53.28	5106.13	5159.41	
33040	73.79	5107.21	5181.00	
33041	69.70	5108.18	5177.88	
33042	55.47	5109.41	5164.88	
33043	59.40	5111.99	5171.39	
33044	62.34	5112.75	5175.09	
33045	64.09	5113.28	5177.37	
33046	58.71	5117.25	5175.96	
33047	69.66	5120.73	5190.39	
33051	55.62	5101.52	5157.14	
33055	55.06	5101.30	5156.36	
33056	52.73	5100.88	5153.61	
33057	51.38	5100.32	5151.70	
33058	47.93	5100.71	5148.64	
33059	58.72	5104.08	5162.80	
33060	52.34	5108.20	5160.54	
33062	68.61	5106.75	5175.36	
33064	51.36	5111.88	5163.24	
33070	51.53	5103.55	5155.08	
33071	50.56	5102.54	5153.10	

TABLE A-2 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33072	51.70	5101.46	5153.16	
33073	43.90	5101.46	5145.36	
33500	43.49	5108.53	5152.02	
33501	35.89	5115.77	5151.66	
33502	48.00	5111.55	5159.55	
33505	63.00	5103.07	5166.07	
33506	46.00	5102.51	5148.51	
33507	43.76	5101.92	5145.68	
33508	0.00	-999.00	5156.29	DRY
33509	46.61	5102.47	5149.08	
33510	47.25	5106.36	5153.61	
33511	46.00	5106.46	5152.46	
33512	48.52	5106.75	5155.27	
33514	56.45	5120.37	5176.82	
33530	53.26	5114.31	5167.57	
33531	53.46	5110.80	5164.26	
33533	44.00	5102.76	5146.76	
33534	58.00	5101.09	5159.09	
33576	39.66	5114.77	5154.43	
33577	49.94	5106.26	5156.20	
33578	49.70	5105.55	5155.25	
33579	53.38	5103.64	5157.02	
33580	52.85	5103.76	5156.61	
33581	54.70	5104.68	5159.38	
33582	49.26	5104.00	5153.26	
33583	46.52	5107.98	5154.50	
34002	70.17	5121.69	5191.86	
34005	67.71	5116.09	5183.80	
34008	55.10	5110.51	5165.61	
34515	46.12	5120.45	5166.57	

Comments are from Shell Field Water Measurement Logs
Water Elevation - 997.00 = see comment
Water Elevation - 998.00 = water below bottom of well screen
Water Elevation - 999.00 = dry well

TABLE A-3

WATER LEVEL MEASUREMENTS
JULY 6 & 20, 1989

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
03001	75.26	5135.04	5210.30	
03002	67.30	5129.12	5196.42	
03005	22.26	5174.95	5197.21	
03008	63.10	5157.48	5220.58	
03009	75.86	5134.88	5210.74	
03010	70.47	5135.75	5206.22	
03516	62.71	5125.19	5187.90	
03517	56.91	5125.23	5182.14	
03518	48.57	5125.56	5174.13	
03519	69.56	-998.00	5185.42	
03522	71.00	5133.20	5204.20	
03523	66.18	5140.30	5206.48	
03526	61.88	5125.40	5187.28	
04010	68.60	5126.97	5195.57	
04013	70.19	5122.52	5192.71	
04017	63.51	5123.69	5187.20	
04019	62.92	5124.29	5187.21	
04021	71.42	5121.90	5193.32	
04024	71.43	5121.14	5192.57	
04026	65.41	5126.80	5192.21	
04030	65.52	5133.73	5199.25	
04524	60.44	5138.79	5199.23	
04525	61.79	5139.27	5201.06	
04527	63.27	5123.94	5187.21	
04528	69.20	5122.65	5191.85	
04529	71.21	5122.06	5193.27	
04532	64.23	5125.22	5189.45	
28016	0.00	-997.00	5145.88	CLOSED
28017	0.00	-997.00	5145.62	CLOSED
28018	47.82	5100.94	5148.76	
28019	0.00	-997.00	5147.48	CLOSED
28020	42.81	5101.05	5143.86	
28021	43.79	5100.55	5144.34	
28022	35.20	5108.38	5143.58	
28023	36.36	5097.94	5134.30	
28027	40.05	5100.54	5140.59	
28503	50.53	5105.01	5155.54	
28513	38.00	5102.78	5140.78	

TABLE A-3 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33001	54.83	5114.93	5169.76	
33003	54.95	5100.59	5155.54	
33004	49.59	5100.27	5149.86	
33005	49.76	5101.75	5151.51	
33006	55.39	5101.88	5157.27	
33007	0.00	-997.00	5155.67	CLOSED
33008	0.00	-997.00	5155.90	CLOSED
33009	0.00	-997.00	5156.83	CLOSED
33010	0.00	-997.00	5155.12	CLOSED
33011	57.46	5094.73	5152.19	
33012	0.00	-997.00	5164.12	CLOSED
33014	65.36	5094.86	5160.22	
33017	0.00	-999.00	5175.02	DRY
33018	72.29	-998.00	5168.70	
33025	56.08	5100.79	5156.87	
33030	58.57	5115.51	5174.08	
33033	41.07	5109.53	5150.60	
33038	67.77	5103.78	5171.55	
33039	54.78	5104.63	5159.41	
33040	74.91	5106.09	5181.00	
33041	71.36	5106.52	5177.88	
33042	57.79	5107.09	5164.88	
33043	60.37	5111.02	5171.39	
33044	64.50	5110.59	5175.09	
33045	66.14	5111.23	5177.37	
33046	60.00	5115.96	5175.96	
33047	70.33	5120.06	5190.39	
33051	56.29	5100.85	5157.14	
33055	55.76	5100.60	5156.36	
33056	53.36	5100.25	5153.61	
33057	51.83	5099.87	5151.70	
33058	48.47	5100.17	5148.64	
33059	67.43	5095.37	5162.80	
33060	55.86	5104.68	5160.54	
33062	69.22	5106.14	5175.36	
33064	53.91	5109.33	5163.24	
33070	52.88	5102.20	5155.08	
33071	51.37	5101.73	5153.10	

TABLE A-3 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33072	52.26	5100.90	5153.16	
33073	44.42	5100.94	5145.36	
33500	46.46	5105.56	5152.02	
33501	37.75	5113.91	5151.66	
33502	49.77	5109.78	5159.55	
33505	63.67	-998.00	5166.07	
33506	46.48	5102.03	5148.51	
33507	44.21	5101.47	5145.68	
33508	0.00	-999.00	5156.29	DRY
33509	46.87	5102.21	5149.08	
33510	47.84	5105.77	5153.61	
33511	46.49	5105.97	5152.46	
33512	48.76	5106.51	5155.27	
33514	57.00	5119.82	5176.82	
33530	0.00	-999.00	5167.57	DRY
33531	56.46	5107.80	5164.26	
33533	44.45	5102.31	5146.76	
33534	56.45	5102.64	5159.09	
33576	45.18	5109.25	5154.43	
33577	52.42	5103.78	5156.20	
33578	52.67	5102.58	5155.25	
33579	56.37	5100.65	5157.02	
33580	54.48	5102.13	5156.61	
33581	58.10	5101.28	5159.38	
33582	51.91	5101.32	5153.23	
33583	49.87	5104.63	5154.50	
34002	70.35	5121.51	5191.86	
34005	67.74	5116.06	5183.80	
34008	55.19	5110.42	5165.61	
34515	46.34	5120.23	5166.57	
M-1	57.84	5103.49	5161.33	
M-2	55.84	5089.72	5145.56	
M-3	54.06	5085.85	5139.91	
M-5	40.02	5094.40	5134.42	
M-6	49.00	5102.93	5151.93	

Comments are from Shell Field Water Measurement Logs
Water Elevation - 997.00 = see comment
Water Elevation - 998.00 = water below bottom of well screen
Water Elevation - 999.00 = dry well

TABLE A-4

WATER LEVEL MEASUREMENTS
OCTOBER 5, 1989

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
03001	75.74	5134.56	5210.30	
03002	67.71	5128.71	5196.42	
03005	22.27	5174.94	5197.21	
03008	63.26	5157.32	5220.58	
03009	76.27	5134.47	5210.74	
03010	70.91	5135.31	5206.22	
03516	63.21	5124.69	5187.90	
03517	57.28	5124.86	5182.14	
03518	48.90	5125.23	5174.13	
03519	59.89	-998.00	5185.42	
03522	72.26	5131.94	5204.20	
03523	66.61	5139.87	5206.48	
03526	62.45	5124.83	5187.28	
04010	69.31	5126.26	5195.57	
04013	70.72	5121.99	5192.71	
04017	63.89	5123.31	5187.20	
04019	63.36	5123.85	5187.21	
04021	71.93	5121.39	5193.32	
04024	72.00	5120.57	5192.57	
04026	65.86	5126.35	5192.21	
04030	65.91	5133.34	5199.25	
04524	60.84	5138.39	5199.23	
04525	62.10	5138.96	5201.06	
04527	63.78	5123.43	5187.21	
04528	69.65	5122.20	5191.85	
04529	71.78	5121.49	5193.27	
04532	65.70	5123.75	5189.45	
28016	0.00	-997.00	5145.88	CLOSED
28017	0.00	-997.00	5145.62	CLOSED
28018	48.76	5100.00	5148.76	
28019	0.00	-997.00	5147.48	CLOSED
28020	43.80	5100.06	5143.86	
28021	45.00	5099.34	5144.34	
28022	35.50	5108.08	5143.58	
28023	36.58	5097.72	5134.30	
28027	40.79	5099.80	5140.59	
28503	51.84	5103.70	5155.54	

TABLE A-4 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
28513	39.00	5101.78	5140.78	
33001	55.21	5114.55	5169.76	
33003	0.00	-997.00	5155.54	CLOSED
33004	0.00	-997.00	5149.86	CLOSED
33005	0.00	-997.00	5151.51	CLOSED
33006	0.00	-997.00	5157.27	CLOSED
33007	0.00	-997.00	5155.67	CLOSED
33008	0.00	-997.00	5155.90	CLOSED
33009	0.00	-997.00	5156.83	CLOSED
33010	0.00	-997.00	5155.12	CLOSED
33011	0.00	-997.00	5152.19	CLOSED
33012	0.00	-997.00	5164.12	CLOSED
33014	60.23	5099.99	5160.22	
33017	0.000	-999.00	5175.02	DRY
33018	69.36	5099.34	5168.70	
33025	57.00	5099.87	5156.87	
33030	58.78	5115.30	5174.08	
33033	41.31	5109.29	5150.60	
33038	67.82	5103.73	5171.55	
33039	54.84	5104.57	5159.41	
33040	75.19	5105.81	5181.00	
33041	71.46	5106.42	5177.88	
33042	57.52	5107.36	5164.88	
33043	60.73	5110.66	5171.39	
33044	64.40	5110.69	5175.09	
33045	66.08	5111.29	5177.37	
33046	60.26	5115.70	5175.96	
33047	70.90	5119.49	5190.39	
33051	57.24	5099.90	5157.14	
33055	56.67	5099.69	5156.36	
33056	54.28	5099.33	5153.61	
33057	52.66	5099.04	5151.70	
33058	49.24	5099.40	5148.64	
33059	62.58	5100.22	5162.80	
33060	54.82	5105.72	5160.54	
33062	70.50	-998.00	5175.36	
33064	53.63	5109.61	5163.24	
33070	53.61	5101.47	5155.08	

TABLE A-4 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33071	52.60	-998.00	5153.10	
33072	53.00	5100.16	5153.16	
33073	45.22	5100.14	5145.36	
33500	47.70	5104.32	5152.02	
33501	38.80	5112.86	5151.66	
33502	49.59	5109.96	5159.55	
33505	0.00	-999.00	5166.07	DRY
33506	47.11	5101.40	5148.51	
33507	44.86	5100.82	5145.68	
33508	0.00	-999.00	5156.29	DRY
33509	47.51	5101.57	5149.08	
33510	48.25	5105.36	5153.61	
33511	46.75	5105.71	5152.46	
33512	49.00	5106.27	5155.27	
33514	57.39	5119.43	5176.82	
33530	0.00	-999.00	5167.57	DRY
33531	55.81	5108.45	5164.26	
33533	45.05	5101.71	5146.76	
33534	57.20	5101.89	5159.09	
33576	50.45	5103.98	5154.43	
33577	54.00	5102.20	5156.20	
33578	53.90	5101.35	5155.25	
33579	58.79	-998.00	5157.02	
33580	55.07	5101.54	5156.61	
33581	58.00	5101.38	5159.38	
33582	51.38	5101.88	5153.26	
33583	51.82	5102.68	5154.50	
34002	70.64	5121.22	5191.86	
34005	68.00	5115.80	5183.80	
34008	55.48	5110.13	5165.61	
34515	46.66	5119.91	5166.57	

Comments are from Shell Field Water Measurement Logs
Water Elevation - 997.00 = see comment
Water Elevation - 998.00 = water below bottom of well screen
Water Elevation - 999.00 = dry well

TABLE A-5

WATER LEVEL MEASUREMENTS
JANUARY 4, 1990

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
03001	75.87	5134.43	5210.30	
03002	67.70	5128.72	5196.42	
03005	22.36	5174.85	5197.21	
03008	63.47	5157.11	5220.58	
03009	76.37	5134.37	5210.74	
03010	71.05	5135.17	5206.22	
03516	63.04	5124.86	5187.90	
03517	57.27	5124.87	5182.14	
03518	48.91	5125.22	5174.13	
03519	60.00	-998.00	5185.42	
03522	72.45	5131.75	5204.20	
03523	66.71	5139.77	5206.48	
03526	63.00	5124.28	5187.28	
04010	69.00	5126.57	5195.57	
04013	70.34	5122.37	5192.71	
04017	63.68	5123.52	5187.20	
04019	63.20	5124.01	5187.21	
04021	71.44	5121.88	5193.32	
04024	71.37	5121.20	5192.57	
04026	65.82	5126.39	5192.21	
04030	66.05	5133.20	5199.25	
04524	61.00	5138.23	5199.23	
04525	62.36	5138.70	5201.06	
04527	63.54	5123.67	5187.21	
04528	69.37	5122.48	5191.85	
04529	71.37	5121.90	5193.27	
04532	65.43	5124.02	5189.45	
28018	48.00	5100.76	5148.76	
28020	42.75	5101.11	5143.86	
28021	43.81	5100.53	5144.34	
28022	35.24	5108.34	5143.58	
28023	36.24	5098.06	5134.30	
28027	40.08	5100.51	5140.59	
28503	49.35	5106.19	5155.54	
28513	37.70	5103.08	5140.78	
33001	55.00	5114.76	5169.76	

TABLE A-5 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33014	55.05	5105.17	5160.22	
33017	0.00	-999.00	5175.02	DRY
33018	63.95	5104.75	5168.70	
33025	55.47	5101.40	5156.87	
33030	57.74	5116.34	5174.08	
33033	41.13	5109.47	5150.60	
33038	67.84	5103.71	5171.55	
33039	53.52	5105.89	5159.41	
33040	74.04	5106.96	5181.00	
33041	69.85	5108.03	5177.88	
33042	55.56	5109.32	5164.88	
33043	59.84	5111.55	5171.39	
33044	62.55	5112.54	5175.09	
33045	64.21	5113.16	5177.37	
33046	59.27	5116.69	5175.96	
33047	70.25	5120.14	5190.39	
33051	55.63	5101.51	5157.14	
33055	55.13	5101.23	5156.36	
33056	52.78	5100.83	5153.61	
33057	51.34	5100.36	5151.70	
33058	48.08	5100.56	5148.64	
33059	57.59	5105.21	5162.80	
33060	52.11	5108.43	5160.54	
33062	68.86	5106.50	5175.36	
33064	51.49	5111.75	5163.24	
33070	51.89	5103.19	5155.08	
33071	50.91	5102.19	5153.10	
33072	52.00	5101.16	5153.16	
33073	44.25	5101.11	5145.36	
33500	44.19	5107.83	5152.02	
33501	35.33	5116.33	5151.66	
33502	46.51	5113.04	5159.55	
33505	63.28	5102.79	5166.07	
33506	46.28	5102.23	5148.51	
33507	44.20	5101.48	5145.68	
33508	0.00	-999.00	5156.29	DRY

TABLE A-5 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33509	46.94	5102.14	5149.08	
33510	47.55	5106.06	5153.61	
33511	46.33	5106.13	5152.46	
33512	48.69	5106.58	5155.27	
33514	57.08	5119.74	5176.82	
33530	0.00	-999.00	5167.57	DRY
33531	53.43	5110.83	5164.26	
33533	44.26	5102.50	5146.76	
33534	56.48	5102.61	5159.09	
33576	41.56	5112.87	5154.43	
33577	50.37	5105.83	5156.20	
33578	50.04	5105.21	5155.25	
33579	52.92	5104.10	5157.02	
33580	53.19	5103.42	5156.61	
33581	54.83	5104.55	5159.38	
33582	49.18	5104.08	5153.26	
33583	47.50	5107.00	5154.50	
34002	70.66	5121.20	5191.86	
34005	68.17	5115.63	5183.80	
34008	55.45	5110.16	5165.61	
34515	46.57	5120.00	5166.57	
M-1	56.30	5105.03	5161.33	
M-2	52.90	5092.66	5145.56	
M-3	46.90	5093.01	5139.91	
M-5	38.85	5095.57	5134.42	
M-6	48.23	5103.70	5151.93	

Comments are from Shell Field Water Measurement Logs
Water Elevation - 998.00 = water below bottom of well screen
Water Elevation - 999.00 = dry well

TABLE A-6

WATER LEVEL MEASUREMENTS
APRIL 2, 1990

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
03001	75.63	5134.67	5210.30	
03002	67.50	5128.92	5196.42	
03005	22.60	5174.61	5197.21	
03008	63.52	5157.06	5220.58	
03009	76.20	5134.54	5210.74	
03010	70.88	5135.34	5206.22	
03516	62.85	5125.05	5187.90	
03517	57.00	5125.14	5182.14	
03518	48.68	5125.45	5174.13	
03519	59.73	-998.00	5185.42	
03522	72.23	5131.97	5204.20	
03523	66.62	5139.86	5206.48	
03526	62.58	5124.70	5187.28	
04010	68.36	5127.21	5195.57	
04013	70.00	5122.71	5192.71	
04017	63.42	5123.78	5187.20	
04019	63.03	5124.18	5187.21	
04021	71.13	5122.19	5193.32	
04024	71.05	5121.52	5192.57	
04026	65.58	5126.63	5192.21	
04030	65.79	5133.46	5199.25	
04524	60.65	5138.58	5199.23	
04525	62.10	5138.96	5201.06	
04527	63.32	5123.89	5187.21	
04528	69.00	5122.85	5191.85	
04529	71.03	5122.24	5193.27	
04532	65.11	5124.34	5189.45	
28018	47.17	5101.59	5148.76	
28020	41.58	5102.28	5143.86	
28021	42.60	5101.74	5144.34	
28022	35.00	5108.58	5143.58	
28023	36.34	5097.96	5134.30	
28027	39.59	5101.00	5140.59	
28503	48.00	5107.[illegible]4	5155.54	
28513	36.73	5[illegible]04.05	5140.78	
33001	54.71	5115.05	5169.76	
33014	54.13	5106.09	5160.22	

TABLE A-6 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33017	53.45	5121.57	5175.02	
33018	62.93	5105.77	5168.70	
33025	54.48	5102.39	5156.87	
33030	57.29	5116.79	5174.08	
33033	40.85	5109.75	5150.60	
33038	67.29	5104.26	5171.55	
33039	53.11	5106.30	5159.41	
33040	73.61	5107.39	5181.00	
33041	69.39	5108.49	5177.88	
33042	54.96	5109.92	5164.88	
33043	59.26	5112.13	5171.39	
33044	61.93	5113.16	5175.09	
33045	63.54	5113.83	5177.37	
33046	58.70	5117.26	5175.96	
33047	69.81	5120.58	5190.39	
33051	54.66	5102.48	5157.14	
33055	54.19	5102.17	5156.36	
33056	51.82	5101.79	5153.61	
33057	50.47	5101.23	5151.70	
33058	47.20	5101.44	5148.64	
33059	56.65	5106.15	5162.80	
33060	51.36	5109.18	5160.54	
33062	68.35	5107.01	5175.36	
33064	50.84	5112.40	5163.24	
33070	51.45	5103.63	5155.08	
33071	50.27	5102.83	5153.10	
33072	51.20	5101.96	5153.16	
33073	43.39	5101.97	5145.36	
33500	42.10	5109.92	5152.02	
33501	33.90	5117.76	5151.66	
33502	46.29	5113.26	5159.55	
33505	62.76	5103.31	5166.07	
33506	45.73	5102.78	5148.51	
33507	43.63	5102.05	5145.68	
33508	0.00	-999.00	5156.29	DRY
33509	46.33	5102.75	5149.08	
33510	47.12	5106.49	5153.61	

TABLE A-6 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33511	45.88	5106.58	5152.46	
33512	48.56	5106.71	5155.27	
33514	56.75	5120.07	5176.82	
33530	33.03	5134.54	5167.57	
33531	52.77	5111.49	5164.26	
33533	43.77	5102.99	5146.76	
33534	55.76	5103.33	5159.09	
33576	36.85	5117.58	5154.43	
33577	48.70	5107.50	5156.20	
33578	48.50	5106.75	5155.25	
33579	52.33	5104.69	5157.02	
33580	52.59	5104.02	5156.61	
33581	54.00	5105.38	5159.38	
33582	48.32	5104.94	5153.26	
33583	44.80	5109.70	5154.50	
33584	55.27	5108.02	5163.29	
33585	47.27	5107.94	5155.21	
33586	54.79	5105.73	5160.52	
33587	50.58	5105.66	5156.24	
33588	49.54	5105.52	5155.06	
34002	70.46	5121.40	5191.86	
34005	68.05	5115.75	5183.80	
34008	55.26	5110.35	5165.61	
34515	46.35	5120.22	5166.57	
M-1	55.00	5106.33	5161.33	
M-2	52.55	5093.01	5145.56	
M-3	45.08	5094.83	5139.91	
M-5	38.92	5095.50	5134.42	
M-6	46.93	5105.00	5151.93	

Comments are from Shell Field Water Measurement Logs
Water Elevation - 997.00 = see comment
Water Elevation - 998.00 = water below bottom of well screen
Water Elevation - 999.00 = dry well

TABLE A-7

WATER LEVEL MEASUREMENTS
JULY 5, 1990

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
03001	75.67	5134.63	5210.30	
03002	67.62	5128.80	5196.42	
03005	21.55	5175.66	5197.21	
03008	63.56	5157.02	5220.58	
03009	76.35	5134.39	5210.74	
03010	70.93	5135.29	5206.22	
03516	63.07	5124.83	5187.90	
03517	57.22	5124.92	5182.14	
03518	48.83	5125.30	5174.13	
03519	59.95	-998.00	5185.42	
03522	72.27	5131.93	5204.20	
03523	60.00	5146.48	5206.48	
03526	62.65	5124.63	5187.28	
04010	68.79	5126.78	5195.57	
04013	70.50	5122.21	5192.71	
04017	63.77	5123.43	5187.20	
04019	63.28	5123.93	5187.21	
04021	71.77	5121.55	5193.32	
04024	71.84	5120.73	5192.57	
04026	65.72	5126.49	5192.21	
04030	65.87	5133.38	5199.25	
04524	60.76	5138.47	5199.23	
04525	62.00	5139.06	5201.06	
04527	63.61	5123.60	5187.21	
04528	69.44	5122.41	5191.85	
04529	71.66	5121.61	5193.27	
04532	65.55	5123.90	5189.45	
28018	47.89	5100.87	5148.76	
28020	42.96	5100.90	5143.86	
28021	43.72	5100.62	5144.34	
28022	35.19	5108.39	5143.58	
28023	36.31	5097.99	5134.30	
28027	40.13	5100.46	5140.59	
28503	51.00	5104.54	5155.54	
28513	38.28	5102.50	5140.78	
33001	55.00	5114.76	5169.76	
33014	68.96	5091.26	5160.22	

TABLE A-7 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33017	58.54	5116.48	5175.02	
33018	72.24	-998.00	5168.70	
33025	58.00	5098.87	5156.87	
33030	59.11	5114.97	5174.08	
33033	41.14	5109.46	5150.60	
33038	67.80	5103.75	5171.55	
33039	55.28	5104.13	5159.41	
33040	0.00	-999.00	5181.00	DRY
33041	72.18	5105.70	5177.88	
33042	0.00	-999.00	5164.88	DRY
33043	60.48	5110.91	5171.39	
33044	65.50	5109.59	5175.09	
33045	67.12	5110.25	5177.37	
33046	60.55	5115.41	5175.96	
33047	70.69	5119.70	5190.39	
33051	58.20	5098.94	5157.14	
33055	55.60	5100.76	5156.36	
33056	53.13	5100.48	5153.61	
33057	51.58	5100.12	5151.70	
33058	48.23	5100.41	5148.64	
33059	71.37	5091.43	5162.80	
33060	57.37	5103.17	5160.54	
33062	69.27	5106.09	5175.36	
33064	55.04	5108.20	5163.24	
33070	53.39	5101.69	5155.08	
33071	51.82	5101.28	5153.10	
33072	52.33	5100.83	5153.16	
33073	44.48	5100.88	5145.36	
33500	47.42	5104.60	5152.02	
33501	38.50	5113.16	5151.66	
33502	50.14	5109.41	5159.55	
33505	0.00	-999.00	5166.07	DRY
33506	46.63	5101.88	5148.51	
33507	44.38	5101.30	5145.68	
33508	0.00	-999.00	5156.29	DRY
33509	46.83	5102.25	5149.08	
33510	48.00	5105.61	5153.61	

TABLE A-7 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33511	46.60	5105.86	5152.46	
33512	48.87	5106.40	5155.27	
33514	57.28	5119.54	5176.82	
33530	53.29	5114.28	5167.57	
33531	57.65	5106.61	5164.26	
33533	44.60	5102.16	5146.76	
33534	58.05	5101.04	5159.09	
33576	47.75	5106.68	5154.43	
33577	53.32	5102.88	5156.20	
33578	53.68	5101.57	5155.25	
33579	58.91	-998.00	5157.02	
33580	55.13	5101.48	5156.61	
33581	59.40	5099.98	5159.38	
33582	53.12	5100.14	5153.26	
33583	50.87	5103.63	5154.50	
33584	63.43	5099.86	5163.29	
33585	54.95	5100.26	5155.21	
33586	63.83	5096.69	5160.52	
33587	58.34	5097.90	5156.24	
33588	58.33	5096.73	5155.06	
34002	70.55	5121.31	5191.86	
34005	68.03	5115.77	5183.80	
34008	55.32	5110.29	5165.61	
34515	46.59	5119.98	5166.57	
M-1	58.10	5103.23	5161.33	
M-2	53.75	5091.81	5145.56	
M-3	47.85	5092.06	5139.91	
M-5	39.01	5095.41	5134.42	
M-6	49.47	5102.46	5151.93	

Comments are from Shell Field Water Measurement Logs
Water Elevation - 997.00 = see comment
Water Elevation - 998.00 = water below bottom of well screen
Water Elevation - 999.00 = dry well

TABLE A-8

WATER LEVEL MEASUREMENTS
OCTOBER 1, 1990

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
03001	76.00	5134.30	5210.30	
03002	67.95	5128.47	5196.42	
03005	22.51	5174.70	5197.21	
03008	63.61	5156.97	5220.58	
03009	76.59	5134.15	5210.74	
03010	71.24	5134.98	5206.22	
03516	63.34	5124.56	5187.90	
03517	57.39	5124.75	5182.14	
03518	49.13	5125.00	5174.13	
03519	60.16	-998.00	5185.42	
03522	72.65	5131.55	5204.20	
03523	66.22	5140.26	5206.48	
03526	62.49	5124.79	5187.28	
04010	69.35	5126.22	5195.57	
04013	70.91	5121.80	5192.71	
04017	64.12	5123.08	5187.20	
04019	63.55	5123.66	5187.21	
04021	72.18	5121.14	5193.32	
04024	32.20	5160.37	5192.57	
04026	66.12	5126.09	5192.21	
04030	66.18	5133.07	5199.25	
04524	61.11	5138.12	5199.23	
04525	62.37	5138.69	5201.06	
04527	64.00	5123.21	5187.21	
04528	69.87	5121.98	5191.85	
04529	72.00	5121.27	5193.27	
04532	0.00	-999.00	5189.45	DRY
28018	48.63	5100.13	5148.76	
28020	43.70	5100.16	5143.86	
28021	44.95	5099.39	5144.34	
28022	35.33	5108.25	5143.58	
28023	36.25	5098.05	5134.30	
28027	40.51	5100.08	5140.59	
28503	52.46	5103.08	5155.54	
28513	39.10	5101.68	5140.78	
33001	55.37	5114.39	5169.76	
33014	60.70	5099.52	5160.22	
33017	0.00	-999.00	5175.02	DRY

TABLE A-8 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33018	69.83	5098.87	5168.70	
33025	57.04	5099.83	5156.87	
33030	59.20	5114.88	5174.08	
33033	41.43	5109.17	5150.60	
33038	67.81	5103.74	5171.55	
33039	55.28	5104.13	5159.41	
33040	75.58	5105.42	5181.00	
33041	71.90	5105.98	5177.88	
33042	0.00	-999.00	5164.88	DRY
33043	60.85	5110.54	5171.39	
33044	64.95	5110.14	5175.09	
33045	66.70	5110.67	5177.37	
33046	60.60	5115.36	5175.96	
33047	71.07	5119.32	5190.39	
33051	57.30	5099.84	5157.14	
33055	56.71	5099.65	5156.36	
33056	54.16	5099.45	5153.61	
33057	52.56	5099.14	5151.70	
33058	49.14	5099.50	5148.64	
33059	63.05	5099.75	5162.80	
33060	55.47	5105.07	5160.54	
33062	69.27	5106.09	5175.36	
33064	54.18	5109.06	5163.24	
33070	54.20	5100.88	5155.08	
33071	52.94	-998.00	5153.10	
33072	53.08	5100.08	5153.16	
33073	45.26	5100.10	5145.36	
33500	47.70	5104.32	5152.02	
33501	39.63	5112.03	5151.66	
33502	56.50	5103.05	5159.55	
33505	0.00	-999.00	5166.07	DRY
33506	47.30	5101.21	5148.51	
33507	44.95	5100.73	5145.68	
33508	0.00	-999.00	5156.29	DRY
33509	47.38	5101.70	5149.08	
33510	48.40	5105.21	5153.61	
33511	46.87	5105.59	5152.46	
33512	49.00	5106.27	5155.27	
33514	57.72	5119.10	5176.82	
33530	53.20	5114.37	5167.57	
33531	56.38	5107.88	5164.26	

TABLE A-8 Continued

WELL NUMBER	DEPTH TO WATER (ft.)	WATER ELEVATION (ft. msl)	TOP OF CASING (ft. msl)	COMMENTS
33533	0.00	-999.00	5146.76	DRY
33534	57.28	5101.81	5159.09	
33576	50.79	5103.64	5154.43	
33577	54.76	5101.44	5156.20	
33578	54.55	5100.70	5155.25	
33579	57.05	-998.00	5157.02	
33580	55.52	5101.09	5156.61	
33581	58.73	5100.65	5159.38	
33582	51.88	5101.35	5153.23	
33583	52.72	5101.78	5154.50	
33584	60.21	5103.08	5163.29	
33585	52.10	5103.11	5155.21	
33586	60.86	5099.66	5160.52	
33587	56.68	5099.56	5156.24	
33588	55.45	5099.61	5155.06	
34002	70.81	5121.05	5191.86	
34005	68.16	5115.64	5183.80	
34008	55.57	5110.04	5165.61	
34515	46.86	5119.71	5166.57	
M-1	59.30	5102.03	5161.33	
M-2	53.25	5092.31	5145.56	
M-3	57.20	5082.71	5139.91	
M-5	38.91	5095.51	5134.42	
M-6	50.58	5102.39	5152.97	

Comments are from Shell Field Water Measurement Logs
Water Elevation - 997.00 = see comment
Water Elevation - 998.00 = water below bottom of well screen
Water Elevation - 999.00 = dry well

APPENDIX B

TABLE B-1
DBCP SAMPLING RESULTS
JANUARY - FEBRUARY 1989

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
Extraction Wells		
33302	17-jan-1989	0.505
33304	17-jan-1989	0.0516
33308	17-jan-1989	LT 0.04
33310	17-jan-1989	LT 0.04
33312	17-jan-1989	0.395
33314	17-jan-1989	0.0695
33316	17-jan-1989	1.65
33318	17-jan-1989	0.532
33320	17-jan-1989	0.163
33325	17-jan-1989	1.24
33327	17-jan-1989	0.871
33329	17-jan-1989	1.84
33331	17-jan-1989	0.479
33333	17-jan-1989	0.0646
33335	17-jan-1989	0.0511
33336	16-jan-1989	0.107
33338	17-jan-1989	LT 0.04
Monitoring Wells		
03009	17-jan-1989	1.49
03523	20-feb-1989	24
03526	17-jan-1989	LT 0.04
04013	10-feb-1989	5.1
04015	23-feb-1989	2.03
04026	10-feb-1989	9.9
04028	23-feb-1989	0.28
04034	17-jan-1989	LT 0.04
04527	20-feb-1989	0.051
04528	20-feb-1989	0.68
04529	10-feb-1989	LT 0.04
28021	31-jan-1989	LT 0.04
28503	22-feb-1989	LT 0.04
28513	22-feb-1989	LT 0.04
33010	24-jan-1989	LT 0.04
33011	23-feb-1989	LT 0.04
33018	31-jan-1989	LT 0.04
33030	23-feb-1989	2.65
33040	26-jan-1989	0.499
33041	31-jan-1989	0.478
33042	31-jan-1989	2.42
33043	26-jan-1989	0.478
33044	26-jan-1989	0.875
33045	20-feb-1989	LT 0.04

TABLE B-1 (continued)
DBCP SAMPLING RESULTS
JANUARY - FEBRUARY 1989

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
33060	26-jan-1989	0.182
33062	26-jan-1989	1.56
33070	23-jan-1989	1.29
33071	23-jan-1989	2.03
33073	23-jan-1989	0.196
33500	21-feb-1989	LT 0.04
33501	21-feb-1989	LT 0.04
33502	22-feb-1989	0.0594
33506	31-jan-1989	0.159
33507	31-jan-1989	0.0556
33510	26-jan-1989	LT 0.04
33514	10-feb-1989	LT 0.04
33531	21-feb-1989	LT 0.04
33533	31-jan-1989	0.0721
33580	23-jan-1989	0.503
33581	21-feb-1989	0.372
33582	21-feb-1989	LT 0.04
C	28-feb-1989	LT 0.04
C-III	28-feb-1989	LT 0.04
M-1	28-feb-1989	LT 0.04
M-4	28-feb-1989	LT 0.04
M-6	22-feb-1989	LT 0.04

TABLE B-2
DBCP SAMPLING RESULTS
APRIL 1989

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
Extraction Wells		
33302	10-apr-1989	0.527
33304	10-apr-1989	LT 0.13
33308	10-apr-1989	LT 0.13
33310	10-apr-1989	LT 0.13
33312	10-apr-1989	LT 0.13
33314	10-apr-1989	LT 0.13
33316	10-apr-1989	1.04
33318	10-apr-1989	0.434
33320	10-apr-1989	LT 0.13
33325	10-apr-1989	1.98
33327	10-apr-1989	1.01
33329	10-apr-1989	1.37
33331	10-apr-1989	0.509
33333	10-apr-1989	LT 0.13
33335	10-apr-1989	LT 0.13
33336	10-apr-1989	0.169
33338	10-apr-1989	LT 0.13
Monitoring Wells		
03009	13-apr-1989	0.9
03523	13-apr-1989	23
03526	13-apr-1989	LT 0.13
04013	17-apr-1989	4.6
04015	17-apr-1989	2.7
04026	18-apr-1989	9.8
04028	18-apr-1989	0.316
04028	18-apr-1989	LT 0.13 - Rinse Blank
04527	18-apr-1989	LT 0.13
04528	18-apr-1989	0.677
04529	17-apr-1989	LT 0.13
28021	12-apr-1989	LT 0.13
28503	11-apr-1989	LT 0.13
28513	11-apr-1989	LT 0.13
33011	14-apr-1989	LT 0.13
33018	14-apr-1989	LT 0.13
33030	17-apr-1989	1.58
33039	14-apr-1989	0.8
33040	13-apr-1989	0.42
33041	13-apr-1989	0.561
33042	14-apr-1989	2.15
33043	13-apr-1989	0.343
33044	13-apr-1989	1.18
33045	17-apr-1989	LT 0.13

TABLE B-2 (continued)
DBCP SAMPLING RESULTS
APRIL 1989

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)	
33046	17-apr-1989	LT 0.13	
33059	14-apr-1989	LT 0.13	
33060	13-apr-1989	LT 0.13	
33062	14-apr-1989	1.35	
33064	17-apr-1989	LT 0.13	
33070	12-apr-1989	0.219	
33071	12-apr-1989	0.169	
33072	12-apr-1989	0.419	
33073	12-apr-1989	LT 0.13	
33500	11-apr-1989	LT 0.13	
33501	11-apr-1989	LT 0.13	
33502	11-apr-1989	LT 0.13	
33506	14-apr-1989	LT 0.13	
33507	14-apr-1989	LT 0.13	
33510	13-apr-1989	LT 0.13	
33514	17-apr-1989	LT 0.13	
33514	17-apr-1989	LT 0.13	- Rinse Blank
33531	14-apr-1989	LT 0.13	
33533	14-apr-1989	LT 0.13	
33576	11-apr-1989	LT 0.13	
33577	11-apr-1989	LT 0.13	
33578	12-apr-1989	LT 0.13	
33579	12-apr-1989	LT 0.13	
33580	12-apr-1989	0.236	
33581	12-apr-1989	0.221	
33582	12-apr-1989	LT 0.13	
33583	11-apr-1989	LT 0.13	
C	19-apr-1989	LT 0.13	
C-III	19-apr-1989	LT 0.13	
M-1	19-apr-1989	LT 0.13	
M-2	19-apr-1989	LT 0.13	
M-4	19-apr-1989	LT 0.13	
M-6	17-apr-1989	LT 0.13	

TABLE B-3
DBCP SAMPLING RESULTS
JULY 1989

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
Extraction Wells		
33302	10-jul-1989	0.254
33304	13-jul-1989	LT 0.13
33308	13-jul-1989	LT 0.13
33310	10-jul-1989	LT 0.13
33312	10-jul-1989	0.18
33314	10-jul-1989	LT 0.13
33316	13-jul-1989	0.621
33318	13-jul-1989	0.23
33320	13-jul-1989	LT 0.13
33325	10-jul-1989	2.6
33327	10-jul-1989	1.3[illegible]
33329	10-jul-1989	2.4
33331	13-jul-1989	1.92
33333	10-jul-1989	LT 0.13
33335	10-jul-1989	LT 0.13
33336	10-jul-1989	1.37
33338	13-jul-1989	0.668
Monitoring Wells		
03009	18-jul-1989	1.06
03523	18-jul-1989	13
03526	18-jul-1989	LT 0.13
04013	17-jul-1989	4.4
04015	19-jul-1989	1.91
04026	19-jul-1989	8.8
04028	19-jul-1989	0.335
04527	18-jul-1989	LT 0.13
04528	18-jul-1989	0.694
04529	17-jul-1989	LT 0.13
23021	17-jul-1989	LT 0.13
28503	18-jul-1989	LT 0.13
28513	18-jul-1989	LT 0.13
33030	17-jul-1989	4.1
33039	14-jul-1989	0.302
33041	14-jul-1989	0.468
33043	13-jul-1989	0.186
33044	13-jul-1989	1.55
33045	17-jul-1989	LT 0.13
33060	13-jul-1989	0.257
33064	17-jul-1989	LT 0.13
33070	14-jul-1989	0.925
33071	14-jul-1989	LT 0.13

TABLE B-3 (continued)
DBCP SAMPLING RESULTS
JULY 1989

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
33072	14-jul-1989	LT 0.13
33500	18-jul-1989	LT 0.13
33501	18-jul-1989	LT 0.13
33502	18-jul-1989	LT 0.13
33506	14-jul-1989	LT 0.13
33507	14-jul-1989	LT 0.13
33510	14-jul-1989	LT 0.13
33514	17-jul-1989	LT 0.13
33531	17-jul-1989	LT 0.13
33533	14-jul-1989	LT 0.13
33577	14-jul-1989	LT 0.13
33580	14-jul-1989	0.375
33581	14-jul-1989	0.259
33582	18-jul-1989	0.731
C	20-jul-1989	LT 0.13
CIII	20-jul-1989	LT 0.13
M-1	20-jul-1989	LT 0.13
M-2	20-jul-1989	LT 0.13
M-3	20-jul-1989	LT 0.13
M-4	20-jul-1989	LT 0.13
M-5	20-jul-1989	LT 0.13
M-6	13-jul-1989	LT 0.13

TABLE B-4
DBCP SAMPLING RESULTS
OCTOBER 1989

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
Extraction Wells		
33302	09-oct-1989	LT 0.13
33304	09-oct-1989	LT 0.13
33308	09-oct-1989	LT 0.13
33310	09-oct-1989	LT 0.13
33312	09-oct-1989	0.506
33314	09-oct-1989	LT 0.13
33316	09-oct-1989	0.533
33318	09-oct-1989	0.216
33320	09-oct-1989	LT 0.13
33325	09-oct-1989	0.99
33327	09-oct-1989	1.5
33329	09-oct-1989	1.27
33331	09-oct-1989	1.65
33333	09-oct-1989	0.619
33335	09-oct-1989	0.346
33336	09-oct-1989	2.4
33338	09-oct-1989	2.27
Monitoring Wells		
03009	12-oct-1989	1.22
03523	12-oct-1989	4.9
03526	11-oct-1989	LT 0.13
04013	11-oct-1989	3.3
04015	11-oct-1989	1.76
04026	12-oct-1989	7.9
04028	12-oct-1989	0.287
04527	11-oct-1989	LT 0.13
04528	11-oct-1989	0.491
04529	11-oct-1989	LT 0.13
28021	11-oct-1989	LT 0.13
28503	12-oct-1989	LT 0.13
28513	12-oct-1989	LT 0.13
33018	11-oct-1989	LT 0.13
33030	11-oct-1989	2.9
33039	10-oct-1989	0.22
33041	10-oct-1989	0.331
33042	10-oct-1989	0.546
33043	10-oct-1989	0.209
33044	10-oct-1989	0.622
33045	11-oct-1989	LT 0.13
33046	11-oct-1989	LT 0.13
33059	11-oct-1989	LT 0.13

TABLE B-4 (continued)
DBCP SAMPLING RESULTS
OCTOBER 1989

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
33060	10-oct-1989	1.09
33064	11-oct-1989	LT 0.13
33070	10-oct-1989	0.248
33071	10-oct-1989	LT 0.13
33072	10-oct-1989	LT 0.13
33073	10-oct-1989	LT 0.13
33500	12-oct-1989	LT 0.13
33501	12-oct-1989	LT 0.13
33502	12-oct-1989	LT 0.13
33506	10-oct-1989	LT 0.13
33507	10-oct-1989	LT 0.13
33510	10-oct-1989	LT 0.13
33514	11-oct-1989	LT 0.13
33533	10-oct-1989	LT 0.13
33576	12-oct-1989	LT 0.13
33577	10-oct-1989	LT 0.13
33578	10-oct-1989	LT 0.13
33579	10-oct-1989	LT 0.13
33580	10-oct-1989	1.64
33581	10-oct-1989	1.16
33582	12-oct-1989	2.23
33583	12-oct-1989	LT 0.13
C	17-oct-1989	LT 0.13
C-III	17-oct-1989	LT 0.13
M-1	17-oct-1989	LT 0.13
M-2	17-oct-1989	LT 0.13
M-3	17-oct-1989	LT 0.13
M-4	17-oct-1989	LT 0.13
M-5	17-oct-1989	LT 0.13
M-6	11-oct-1989	LT 0.13

TABLE B-5
DBCP SAMPLING RESULTS
JANUARY 1990

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
Extraction Wells		
33302	10-jan-1990	0.423
33304	10-jan-1990	LT 0.13
33308	10-jan-1990	LT 0.13
33310	10-jan-1990	LT 0.13
33312	10-jan-1990	0.3
33314	10-jan-1990	0.229
33316	10-jan-1990	0.393
33318	10-jan-1990	LT 0.13
33320	10-jan-1990	0.287
33325	10-jan-1990	1.3
33327	10-jan-1990	1.3
33329	10-jan-1990	1.9
33331	10-jan-1990	1.7
33333	10-jan-1990	0.334
33335	10-jan-1990	0.179
33336	10-jan-1990	0.494
33338	10-jan-1990	LT 0.13
Monitoring Wells		
28021	08-jan-1990	LT 0.13
33030	09-jan-1990	3.2
33045	09-jan-1990	LT 0.13
33046	08-jan-1990	LT 0.13
33060	08-jan-1990	LT 0.13
33064	08-jan-1990	LT 0.13
33500	10-jan-1990	LT 0.13
33501	10-jan-1990	LT 0.13
33502	10-jan-1990	LT 0.13
33507	08-jan-1990	LT 0.13
33514	08-jan-1990	LT 0.13
33576	09-jan-1990	LT 0.13
33577	09-jan-1990	LT 0.13
33578	08-jan-1990	LT 0.13
33579	08-jan-1990	LT 0.13
33582	09-jan-1990	0.221
33583	09-jan-1990	LT 0.13
C	10-jan-1990	LT 0.13
C-III	10-jan-1990	LT 0.13
M-1	10-jan-1990	LT 0.13
M-2	10-jan-1990	LT 0.13
M-3	10-jan-1990	LT 0.13

TABLE B-5 (continued)
DBCP SAMPLING RESULTS
JANUARY 1990

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
M-4	10-jan-1990	LT 0.13
M-5	10-jan-1990	LT 0.13
M-6	09-jan-1990	LT 0.13

TABLE B-6
DBCP SAMPLING RESULTS
APRIL 1990

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
Extraction Wells		
33302	05-apr-1990	0.324
33304	05-apr-1990	LT 0.13
33308	05-apr-1990	LT 0.13
33310	05-apr-1990	LT 0.13
33312	05-apr-1990	0.146
33314	05-apr-1990	LT 0.13
33316	05-apr-1990	0.637
33318	05-apr-1990	0.252
33320	05-apr-1990	LT 0.13
33325	05-apr-1990	2.1
33327	05-apr-1990	0.675
33329	05-apr-1990	1.39
33331	05-apr-1990	0.445
33333	05-apr-1990	LT 0.13
33335	05-apr-1990	LT 0.13
33336	05-apr-1990	LT 0.13
33338	05-apr-1990	LT 0.13
Monitoring Wells		
03009	03-apr-1990	0.838
03523	03-apr-1990	10
04013	04-apr-1990	6.7
04015	04-apr-1990	1.4
04026	04-apr-1990	4.6
04028	04-apr-1990	0.256
04528	03-apr-1990	0.611
04529	03-apr-1990	LT 0.13
28021	09-apr-1990	LT 0.13
28503	11-apr-1990	LT 0.13
28513	11-apr-1990	LT 0.13
33018	06-apr-1990	LT 0.13
33031	04-apr-1990	LT 0.13
33039	06-apr-1990	0.658
33040	06-apr-1990	0.162
33041	06-apr-1990	0.198
33042	06-apr-1990	1.08
33043	06-apr-1990	0.212
33044	06-apr-1990	0.372
33045	04-apr-1990	LT 0.13
33046	04-apr-1990	LT 0.13
33059	06-apr-1990	LT 0.13
33060	06-apr-1990	LT 0.13

TABLE B-6 (continued)
DBCP SAMPLING RESULTS
APRIL 1990

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
33062	06-apr-1990	0.648
33064	04-apr-1990	LT 0.13
33070	09-apr-1990	0.352
33071	09-apr-1990	0.613
33072	09-apr-1990	LT 0.13
33073	09-apr-1990	LT 0.13
33500	11-apr-1990	LT 0.13
33501	11-apr-1990	LT 0.13
33502	11-apr-1990	LT 0.13
33506	06-apr-1990	LT 0.13
33507	09-apr-1990	LT 0.13
33510	06-apr-1990	LT 0.13
33514	03-apr-1990	LT 0.13
33531	04-apr-1990	LT 0.13
33576	11-apr-1990	LT 0.13
33577	09-apr-1990	LT 0.13
33578	09-apr-1990	LT 0.13
33579	09-apr-1990	LT 0.13
33580	09-apr-1990	0.274
33581	09-apr-1990	0.329
33582	11-apr-1990	LT 0.13
33583	11-apr-1990	LT 0.13
33584	11-apr-1990	LT 0.13
33585	11-apr-1990	LT 0.13
33586	11-apr-1990	LT 0.13
33587	11-apr-1990	0.259
33588	11-apr-1990	0.285
C-III	17-apr-1990	LT 0.13
M-1	17-apr-1990	LT 0.13
M-2	17-apr-1990	LT 0.13
M-3	17-apr-1990	LT 0.13
M-4	17-apr-1990	LT 0.13
M-5	17-apr-1990	LT 0.13
M-6	09-apr-1990	LT 0.13

TABLE B-7
DBCP SAMPLING RESULTS
JULY 1990

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
Extraction Wells		
33302	06-jul-1990	0.399
33304	06-jul-1990	LT 0.13
33308	06-jul-1990	LT 0.13
33310	06-jul-1990	LT 0.13
33312	06-jul-1990	LT 0.13
33314	06-jul-1990	LT 0.13
33316	06-jul-1990	0.441
33318	06-jul-1990	LT 0.13
33320	06-jul-1990	LT 0.13
33325	06-jul-1990	1.59
33327	06-jul-1990	0.933
33329	06-jul-1990	1.84
33331	06-jul-1990	1.45
33333	06-jul-1990	LT 0.13
33335	06-jul-1990	LT 0.13
33336	06-jul-1990	1.53
33338	06-jul-1990	1.22
Monitoring Wells		
28021	09-jul-1990	LT 0.13
28503	11-jul-1990	LT 0.13
33031	09-jul-1990	LT 0.13
33046	09-jul-1990	LT 0.13
33060	09-jul-1990	1.1
33064	09-jul-1990	LT 0.13
33500	10-jul-1990	LT 0.13
33501	11-jul-1990	LT 0.13
33502	11-jul-1990	LT 0.13
33507	09-jul-1990	LT 0.13
33514	09-jul-1990	LT 0.13
33531	09-jul-1990	LT 0.13
33576	10-jul-1990	LT 0.13
33577	09-jul-1990	LT 0.13
33578	09-jul-1990	LT 0.13
33582	10-jul-1990	1.14
33583	10-jul-1990	LT 0.13
33584	10-jul-1990	0.399
33585	10-jul-1990	0.752
33586	10-jul-1990	LT 0.13
33587	10-jul-1990	LT 0.13
33588	10-jul-1990	LT 0.13
C	12-jul-1990	LT 0.13

TABLE B-7 (continued)
DBCP SAMPLING RESULTS
JULY 1990

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
C-III	12-jul-1990	LT 0.13
M-1	12-jul-1990	LT 0.13
M-2	12-jul-1990	LT 0.13
M-3	12-jul-1990	LT 0.13
M-4	12-jul-1990	LT 0.13
M-5	12-jul-1990	LT 0.13
M-6	09-jul-1990	LT 0.13

TABLE B-8
DBCP SAMPLING RESULTS
OCTOBER 1990

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
Extraction Wells		
33302	03-oct-1990	LT 0.13
33304	03-oct-1990	LT 0.13
33308	03-oct-1990	LT 0.13
33310	03-oct-1990	LT 0.13
33312	03-oct-1990	0.209
33314	03-oct-1990	LT 0.13
33316	03-oct-1990	0.243
33318	03-oct-1990	LT 0.13
33320	03-oct-1990	LT 0.13
33325	03-oct-1990	0.566
33327	03-oct-1990	0.353
33329	03-oct-1990	0.817
33331	03-oct-1990	1.03
33333	03-oct-1990	0.701
33335	03-oct-1990	LT 0.13
33336	03-oct-1990	1.35
33338	03-oct-1990	1.92
Monitoring Wells		
03009	02-oct-1990	1.25
03523	02-oct-1990	1.4
04026	02-oct-1990	1
04028	02-oct-1990	0.19
04015	03-oct-1990	1.31
04528	10-oct-1990	0.408
04529	10-oct-1990	LT 0.13
28027	08-oct-1990	LT 0.13
28503	09-oct-1990	LT 0.13
28513	09-oct-1990	LT 0.13
33018	10-oct-1990	LT 0.13
33031	03-oct-1990	LT 0.13
33039	11-oct-1990	0.2
33041	10-oct-1990	0.27
33044	10-oct-1990	0.376
33045	10-oct-1990	LT 0.13
33043	05-oct-1990	0.145
33046	03-oct-1990	LT 0.13
33059	04-oct-1990	LT 0.13
33060	05-oct-1990	2.15
33062	10-oct-1990	0.553
33070	09-oct-1990	LT 0.13
33071	09-oct-1990	LT 0.13

TABLE B-8 (continued)
DBCP SAMPLING RESULTS
OCTOBER 1990

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
33072	09-oct-1990	LT 0.13
33073	09-oct-1990	LT 0.13
33500	08-oct-1990	LT 0.13
33501	08-oct-1990	LT 0.13
33502	09-oct-1990	LT 0.13
33506	11-oct-1990	LT 0.13
33507	11-oct-1990	LT 0.13
33510	10-oct-1990	LT 0.13
33514	03-oct-1990	0.146
33531	10-oct-1990	LT 0.13
33576	08-oct-1990	LT 0.13
33577	08-oct-1990	LT 0.13
33578	09-oct-1990	LT 0.13
33580	09-oct-1990	0.866
33581	09-oct-1990	0.468
33582	05-oct-1990	1.83
33583	08-oct-1990	LT 0.13
33584	04-oct-1990	0.527
33585	04-oct-1990	1.52
33586	04-oct-1990	1.58
33587	04-oct-1990	0.931
33588	04-oct-1990	0.796
C	11-oct-1990	LT 0.13
C-III	11-oct-1990	LT 0.13
M-1	11-oct-1990	LT 0.13
M-3	11-oct-1990	LT 0.13
M-4	11-oct-1990	LT 0.13
M-5	11-oct-1990	LT 0.13
M-6	08-oct-1990	LT 0.13

APPENDIX C

TABLE C-1
TCE SAMPLING RESULTS
MONITORING WELLS
1989

JANUARY

DATA NOT REQUESTED

APRIL

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
33514	17-apr-1989	LT 0.20

JULY

DATA NOT REQUESTED

OCTOBER

DATA NOT REQUESTED

TABLE C-2
TCE SAMPLING RESULTS
MONITORING WELLS
1990

JANUARY

APRIL

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
33584	11-april-1990	3.75
33585	11-april-1990	3.66
33586	11-april-1990	[illegible] 4
33587	11-april-1990	2.90
33588	11-april-1990	3.51

JULY

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
33584	10-july-1990	2.97
33585	10-july-1990	1.15
33586	10-july-1990	LT 0.180
33587	10-july-1990	0.287
33588	10-july-1990	LT 0.180

OCTOBER

SITE ID	SAMPLE DATE	CONCENTRATION (ug/l)
33584	04-october-1990	2.41
33585	04-october-1990	0.732
33586	04-october-1990	0.762
33587	04-october-1990	1.17
33588	04-october-1990	2.04